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BREEDING THE BLACK-FACED LAUGHINGTHRUSH *Garrulax affinis*

by Nigel Hewston

The Black-faced Laughingthrush is one of many of its congeners with a wide distribution in the Himalayas, ranging from Nepal through Myanmar to western China and Taiwan. Birds present in the UK are of Chinese origin. Rutgers (1969) stated that it is found at higher altitudes than other laughingthrushes, up to 9,000ft (approx. 2,745m) or even 11,000ft (approx. 3,350m), so it is not surprising that it has proved to be hardy in European aviaries. According to Grewal, Harvey & Pfister (2002), in India, it is a common breeding resident in the northern mountains, wintering lower in the foothills. It inhabits forest undergrowth and montane scrub, feeding in pairs or small parties on invertebrates and fruits and nesting in low growth. It is apparently more confiding than other laughingthrushes, running rather than flying from disturbances. Grimmett, Inskipp & Inskipp (1999) described its habitat as forest and shrubberies above the treeline.

It is a predominately brown, but very attractive, medium-sized laughingthrush. The head is blackish brown with broad white moustachial markings and a partial white ring behind the eyes. The breast, mantle and scapulars appear scaled, as the feathers have dark brown margins and paler, greyer centres. In a good light the scapulars and parts of the mantle are also glossed with olive. The rump and vent are a rich chestnut and the flight and tail feathers are golden-olive at the base changing to slaty blue-grey at the tips. The eyes and beak are black and the legs a brownish pink. Western birds have prominent white patches on the sides of the neck, but these are less pronounced in Chinese birds. In the pair which bred these were completely absent in one bird and apparent as silvery-grey smudges in the other. Dave Coles (2000) listed six subspecies, Howard & Moore (1984) seven, of which five are present in The Natural History Museum at Tring (Coles, 2000). I have not examined these skins, so have not identified which subspecies my birds belong to.

The male has a clear, but not very loud or interesting whistled song usually of only four notes, described by Grewal, Harvey & Pfister (2002) as "wheet wheeoo woo". The female has a more plaintive whistle analogous to that made by female Pekin Robins *Leiothrix lutea* and Omei Shan Liocichlas *Liocichla omeiensis* which are unpaired or separated from their mates, except that with the laughingthrushes I have occasionally heard this while the male is present. It is similar particularly to the liocichla call, but often contains three or even four notes, as opposed to the two of the liocichla. There is also a metallic chattering or whirring call which may be used as a scolding or alarm call, but which is also used in a duetting display, accompanied by wing flicking. There is another harsh, loud call which I have heard from the juvenile bird and, I think, from the adults, the function of which is not clear to me.

I received a pair of these birds early in April 2005 on loan from Andrew Blyth. This pair, plus another pair and a single female, had previously been here from May 2001-March 2002, while Andrew was rebuilding some of his aviaries. They would have stayed longer, but one pair came into breeding condition in January 2002 and became dangerous to smaller birds (Hewston, 2002). At that time I had no suitable breeding aviary which the pair could have to itself, so the pair was returned to Andrew, along with the other three birds, though these had not caused any problems in mixed aviaries. By 2005 three of the five birds survived, including the pair which had shown no signs of breeding during its last stay, and this was the pair which was returned to me. All the birds were imported in 1997, so the pair was at least eight years old at the time of breeding.

On arrival the pair was housed on its own in a 24ft x 12ft (approx. 7.3m x 3.6m) planted aviary with a shelter 8ft x 4ft (approx. 2.4m x 1.2m) in a shed which also contained the shelter for a pair of Omei Shan Liocichlas which arrived at the same time and was housed in an adjacent aviary. The aviary had been empty for two years and had become rather overgrown. The front was fairly open, with a wire roof and sides and a tall, narrow conifer, a low *Lonicera* bush, some young bamboo, a large *Kniphofia* in a pot and a grassed area, but a *Hebe* in the centre had grown up to and through the roof and almost filled the whole width of the aviary. Together with a *Cotoneaster* at one side, a *leylandii* at the other and a hornbeam *Carpinus* sp. also in the middle, they virtually blocked off the back of the aviary, which was enclosed by fence panels at the back and on one side, and the shed on the other, with opaque sheeting on the roof. There was also a large honeysuckle growing up a central roof support behind the *Hebe*. The aviary was furnished with natural perches and had a large log in the middle. The back had been used as a log store while empty, and logs were left stacked about 3ft (1m) high along the back wall. The top was cut off the cotoneaster to allow the birds to fly the length of one side of the aviary. A universal food, soaked softbill pellets and sultanas, fresh fruit (mainly chopped pear) and mealworms were provided in the shelter.

The birds settled quickly and after about a week a few pieces of nesting material were found dropped on the shelter floor, often the first indication that breeding activity has begun. On April 22nd a nest in the early stages of construction was found about 5ft (1.5m) above the ground near the top of the *leylandii*. A certain amount of dead grass and growing moss were available on the aviary floor, along with bamboo leaves, which were supplemented with tough grass stems, softer grass, moss (provided growing on rocks) and coconut fibre. All these materials were used to make a deep cup, which appeared quite advanced by April 25th, though the first egg was not laid until the 30th. There were two eggs in the first clutch, which were not actually seen until May 16th, the first time since laying that both adults were seen away from the nest. The eggs were incubated until May 21st, when they were candled and found to be clear, so were removed. They were bright blue with a few small dark spots at the large end.

On May 24th the nest was being re-lined, mainly with coconut fibre, and the first egg of the second clutch was laid on May 28th. There were two eggs again and this time they were candled after about six days and were both fertile. Nest inspection was difficult as the sitting bird needed to be flushed from the nest and a mirror used to see inside. The nest with its new lining was now very deep, and the bird trying to leave in a hurry found its way blocked by branches, so inspections were kept to a minimum to avoid stress and possible injury to the sitting bird and damage to the eggs.

On June 12th there were still two eggs in the morning, in the evening one of the birds was seen apparently eating aphids from hornbeam leaves. The next morning there was one chick in the nest, and two by the evening, giving an incubation period of 14-15 days. Mini mealworms were provided ad-lib, with white-skinned ones provided at least three times daily, along with small brown crickets (fed dead, thawed from frozen). After a couple of days waxworms and larger white-skinned mealworms were added, with larger crickets and regular mealworms replacing the smaller ones as the chicks grew.

All appeared to be going well until one chick was found dead below the nest on June 26th. Its body plumage appeared uniformly dark brown and had not spread out from the tracts to cover the whole body. The dark grey flight feathers were only just longer than the coverts. Its skin was pink, it had a prominent yellow gape and its legs were pale flesh coloured. The other chick was still alive but could not be persuaded to raise its head.

However, the second chick did survive and I consulted Dave Coles's excellent handbook to find out when I might expect it to fledge. The youngest fledging age given is 12 days, with the most likely age being 14-16 days. I was not too alarmed when the chick failed to fledge at 16 days, as Dave states that some chicks take as long as 18 days, but when the chick had not fledged by the morning of July 3rd I thought it must have a problem. However, by the next morning it had fledged and was looking healthy and behaving normally despite having stayed in the nest for at least 20 days or probably 21 days. It had the usual short tail and was duller coloured than its parents, but was a good size and was perching in honeysuckle the following day. It found its way into the shelter at 32 days old, by which time the parents were building another nest in the honeysuckle. Three eggs were laid and I made the mistake of assuming that they would be fertile, but when one was found broken below the nest after 10 days' incubation, I candled the others and found they were infertile. There were no further nesting attempts in 2005. The young bird which continued to develop well was still begging, and being fed, on August 24th, though I am sure it was also feeding itself long before then. It was DNA-sexed and found to be a male. I removed it from its parents in late September to be paired with Andrew's other, surviving bird, which fortunately is a female and which he kindly let me have on loan.

Juvenile at 32 days old.

This year (2006), the original pair nested three times. The first egg was laid on April 23rd. This year there were two eggs in each clutch, one of which hatched from each of the first two clutches, but both chicks died at five days old. At least one of the eggs in the third clutch was fertile but failed to hatch. Following a winter trim, the conifer that the birds had used the previous year was not quite the nest site it had been and the birds initially struggled to build a nest in it. However, they took readily to a basket wired to the tree at their chosen site. All three clutches were laid in a nest built, and subsequently re-lined, in this basket.

The new pair, in a smaller (15ft x 6ft (approx. 4.5m x 1.8m)) aviary, was given a dead conifer to nest in which the pair chose in preference to a large clump of bamboo. The pair had the same problem as the first pair and accepted the same solution and had a good nest in the basket by mid-May. No eggs appeared and I eventually noticed that a large lump had appeared on the female's abdomen. I assumed that attempting to breed for the first time at an advanced age had caused a problem in her reproductive tract. She showed no discomfort and was removed to another aviary, to be replaced in early July by another female kindly loaned by Birdworld, near Farnham, Surrey. This bird settled well with the male but no serious attempt was made to nest.

The new female had been in the collection at Birdworld since 1998. I can find no other record of the breeding of the Black-faced Laughingthrush and I am concerned that in 2007, the 2005 male will be the only bird in the UK less than 10 years old, and without very good luck it may be too late to establish this species in captivity, at a time when it seems very unlikely that further stock will become available from Asia in the near future, if ever. I would be very interested to hear from anyone else who keeps this species in the UK or elsewhere. There is a real danger that most species of laughingthrushes now present in aviaries in the UK and elsewhere will be lost unless a concerted effort is made to breed from them in the very near future.

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Nigel Hewston is an Avicultural Society Council Member. He lives at Stonehouse, Glos., UK. E-mail:nigelhewston@supanet.com

As described above, the Black-faced Laughingthrush *Garrulax affinis*, has been bred by Nigel Hewston. It is believed to be the first breeding of this species in Great Britain or Ireland. Anyone who knows of a previous breeding is asked to inform the Hon. Secretary.

AVICULTURAL SUPPORT FOR THE ECHO PARAKEET PROGRAMME ON MAURITIUS

by Roger Wilkinson

This is a short account of the Echo Parakeet *Psittacula eques* conservation programme that is run by the Mauritius Wildlife Conservation Foundation (MWF) in partnership with the National Parks and Conservation Service, Mauritius. In particular it highlights the support from Chester Zoo and other conservation organisations in assisting this programme, both through staff involvement and financial support. This account expands and updates an article previously published by the European Association of Zoos and Aquaria (EAZA) in *Proceedings of the EAZA Conference 2004.*

Chester Zoo is also assisting other conservation initiatives on Mauritius, including providing technical and financial support for the Mauritius Fody *Foudia rubra* and the Olive White-eye *Zosterops olivacea* recovery programmes and has assisted with financial support for veterinary research on the Pink Pigeon *Columba* (*Nesoenas*) *mayeri*. More recently financial and staff support has been provided for projects on the conservation of threatened endemic plants. In the Mascarenes, Chester Zoo continues to support research on the Rodrigues Fruit Bat *Pteropus rodricensis* and through Shoals Rodrigues also helps to finance both marine conservation and community initiatives.

Chester Zoo is one of several organisations supporting the Echo Parakeet conservation project. The Durrell Wildlife Conservation Trust (Jersey Zoo) is the major sponsor of the Mauritius Wildlife Foundation and significant investments in the Echo Parakeet programme have been made by the World Parrot Trust (WPT), The Parrot Society and the Loro Parque Fundación.

I was able to visit Mauritius and Rodrigues in November 2003 when, staying as a house guest of Carl Jones, I learned so much more about these projects through meeting the MWF staff at the field sites. This was especially the case regarding the conservation programme for the Echo Parakeet. I had several enjoyable days accompanying members of the Echo Parakeet team in the field at the most critical time during that year's Echo Parakeet breeding season.

Conservation history

The Echo Parakeet, which is Critically Endangered, occurs only on Mauritius. In 1986 only eight to 12 birds were known, and only two or three of these were females, although a few other birds may have been overlooked. These were restricted to the Black River gorges and surrounding forests, an area that in 1993 was designated the country's first national park.

It was set up to conserve the Mauritius Kestrel *Falco punctatus*, Echo Parakeet, Pink Pigeon and other native wildlife. Further research in 1994 and 1995 gave an estimate of 30 Echo Parakeets in the wild. Although a considerable improvement on the previous estimate, this larger estimate still suggested that extinction was imminent unless immediate conservation attention was focused on this species. Under the guidance of Carl Jones, the Scientific Director of the MWF, and with integrated wild and captive management, the Echo Parakeet recovery has been extremely successful. Through a combination of the release of captive-bred birds and active management of the wild population, by April 2006 the number of birds in the wild had increased to 300-320 individuals.

Conservation management

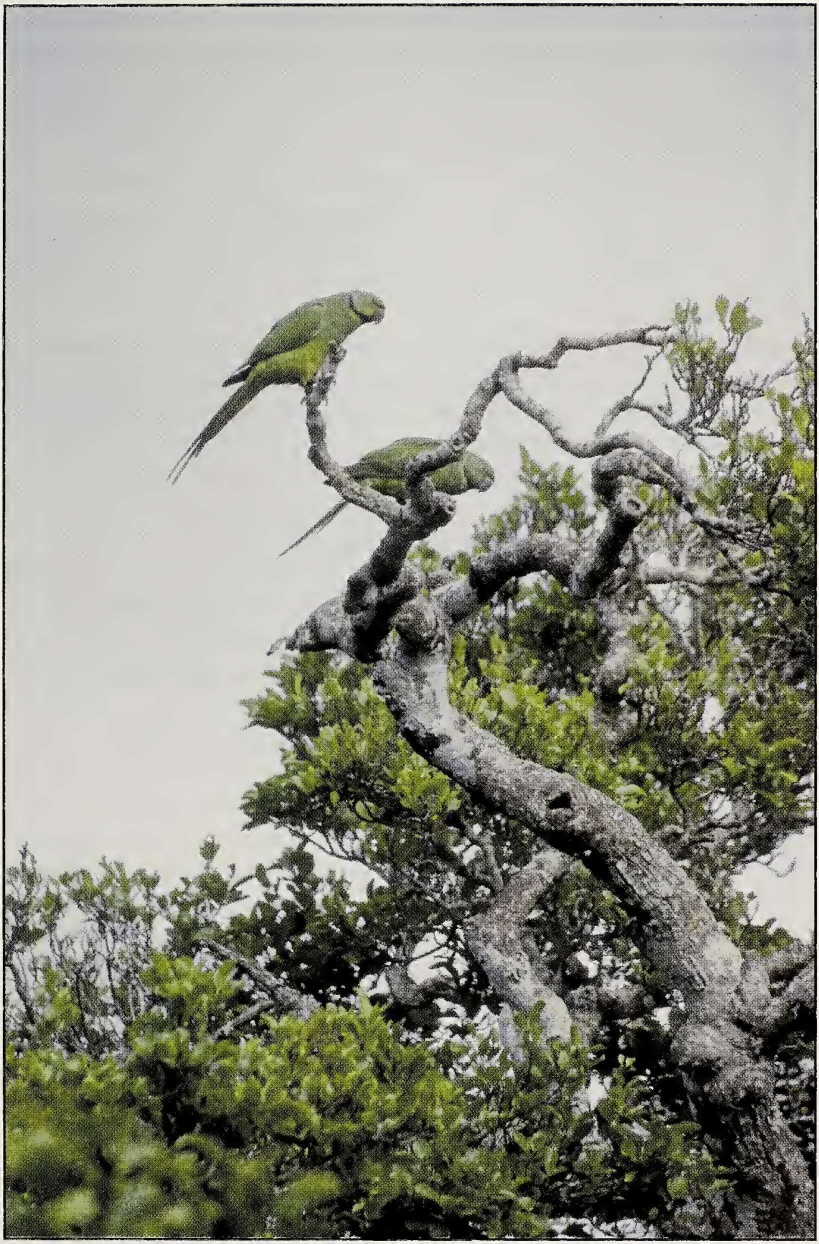
Conservation management is focused on the Echo Parakeets living in the wild, with back-up captive breeding and captive rearing facilities for young birds rescued/harvested from the wild. The field work is coordinated by Jason Malham, a New Zealander, and the Echo Parakeet programme has close interactions with staff of the New Zealand Department of Conservation, with benefits to both as a result of sharing experiences and ideas for recovery programmes for island birds. The captive facilities are managed by Frederique Koenig, a Mauritian trained at Jersey Zoo, who has run the captive facilities for several years. During my visit the hand-rearing of both captive-bred and rescued wild-hatched chicks was managed by Ryan Watson, from Adelaide Zoo, Australia. Ryan is one of a number of staff members from Adelaide Zoo, who over the years have assisted the MWF conservation programmes. In the 2004-2005 breeding season, for example, Heidi Groffen and Pat Hodgens from Adelaide Zoo assisted with releases and hand-raised birds respectively. Prior to this, between 1997-1998, Paradise Park, Cornwall, home of the World Parrot Trust, seconded Kirsty Jenkin, Nick Reynolds, Dale Jackson and Pete Haverson to assist with the Echo Parakeet programme on Mauritius.

Management in the wild, includes checking nest site activities, the provision of artificial nest cavities, nest monitoring and clutch and brood manipulations, supplementary feeding and monitoring of released birds and predator control. Echo Parakeet nest cavities may be taken over by other birds including the White-tailed Tropicbird *Phaethon lepturus*. The latter is discouraged by fixing branches across the entrance to nest cavities, thereby making access to them difficult for this species. Unusual nest predators include the large African snail *Achatina* that has on several occasions 'slimed' young chicks to death in the nest. Areas of the tree trunk above and below the nest entrance are covered in wrap around plastic sheeting that is greased to discourage nest predators, such as monkeys and rats, that may climb up

Roger Wilkinson

Female at nest hole in the wild.

to the nests. The Black Rat *Rattus rattus* is kept under control by poisoning and trapping in areas close to active nest sites.



Roger Wilkinson

Pair of wild Echo Parakeets.

Artificial nests of several different designs are also provided, as the number of suitable natural nest sites is limited and competition for these may limit the number of breeding pairs in an area. The nests are inspected daily and records kept of egg-laying, hatch dates and chick development. This necessitates tree climbing and both Jason and the rest of the field team are skilled climbers. Chicks are weighed and any that weigh less than 20% of the average weight for chicks of their age are removed for hand-rearing. Rescued chicks are transported to the Gerald Durrell Endemic Wildlife Sanctuary (GDEWS) and after being hand-reared there are released back into the wild.

Supplementary feeding is through pole-mounted hoppers containing commercially manufactured parrot pellets. The Echo Parakeets learn to lift up the lids of these hoppers so as to feed. The lids prevent the pellets being taken by other birds and mammals.

Chester Zoo

Conservation support and staff involvement

Direct financial support to MWF in terms of grants between 2000-2005 for Echo Parakeet programme support, including the construction of release aviaries, amounted to over £29,000 (approx. US$54,000). Costs related to Chester Zoo staff working on Mauritius (but excluding their salaries), whilst seconded from Chester Zoo, take these costs to well over £40,000 (approx.US$75,000) over the six years we have been supporting this programme. Most of these costs have previously been met from our conservation budget, that is itself derived from visitor revenue to the zoo. This allows us to inform our zoo visitors that their visit directly supports field conservation. In 2004 and 2005 the funds for the keeper assistance and day to day cover in their absence came from the hugely successful Keeper for a Day scheme (in which members of the public pay to be a keeper for a day) run by the Chester Zoo keeping staff. This financial and staff investment has provided significant benefits to this programme and directly links to the zoo's conservation mission. This support is perhaps unusual in that much of Chester Zoo's conservation outreach focuses on threatened species we hold in the zoo. We do not presently hold any Echo Parakeets, although we hope that we may in the future. Through the Echo Parakeet work we support a Critically Endangered species that we do not currently hold and export our staff expertise to assist this conservation programme.

Anne Morris was our first staff member to work on Mauritius and spent three months in 2000-2001 at the Black River Aviaries (now the Gerald Durrell Endemic Wildlife Sanctuary), where her main task was hand-rearing Echo Parakeets. Anne and her husband Paul have many years' experience of parrot husbandry and of hand-rearing parrots at Chester Zoo, and this was a real opportunity for those skills to be directly applied to parrot conservation in the wild. The facilities and protocols for hand-rearing parrots at the GDEWS are excellent and gave Anne new insights into best practise for parrot rearing. Anne then stayed on longer at Black River and worked with the team releasing the birds she had reared. This greatly assisted the release process and generated real personal satisfaction for her in seeing the birds she had reared being successfully released.

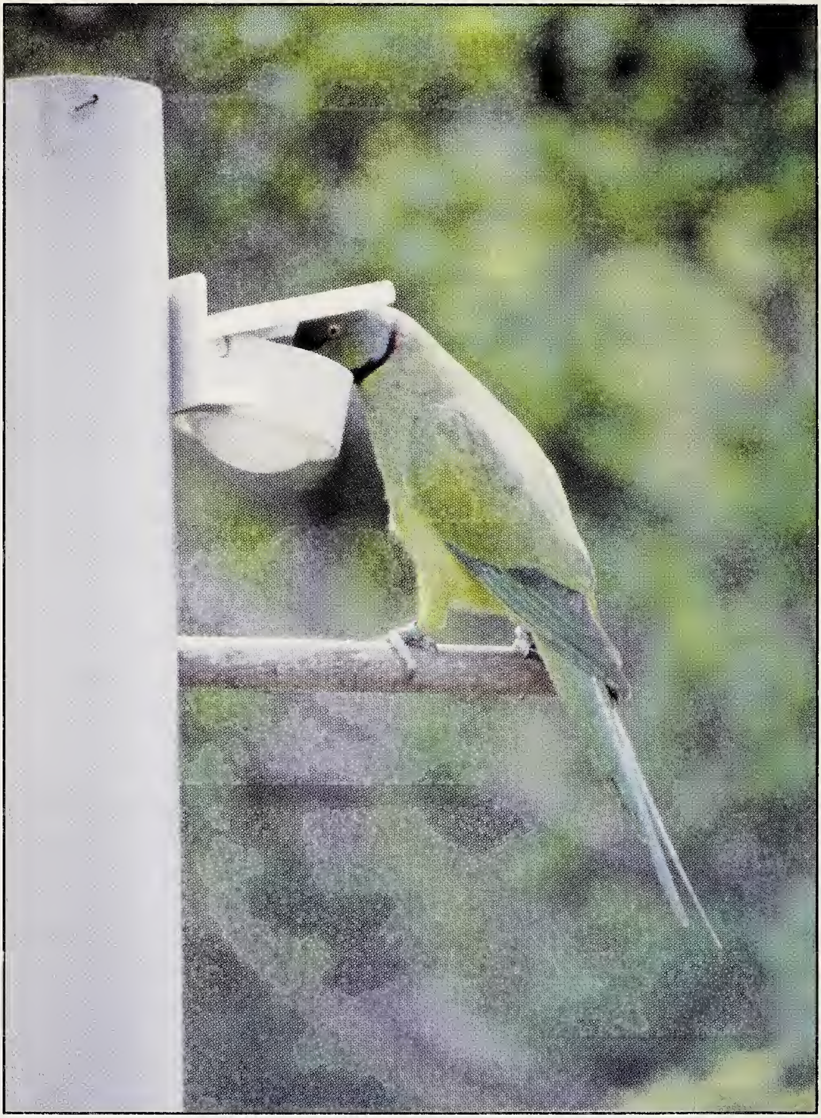
In 2003, two more of our bird keepers, Paul Morris and Clare Daniel, were seconded to MWF for a combined period of over three months and worked with staff releasing hand-reared birds. The release process involves a soft release that requires a combination of keeper skills and knowledge of how the birds behave. After having been hand-reared, the parakeets are first accustomed to their release aviaries and then the behaviour of the released birds is carefully monitored. Again this is an area in which our staff members' experience and skills are uniquely appropriate to assist this most important parrot conservation programme. Paul returned to Mauritius to assist with field work on the Echo Parakeets during the 2004-2005 breeding season.

Chester Zoo staff involvement in this project has been beneficial to Echo Parakeet conservation, the MWF and Chester Zoo. This involvement has benefited our staff in terms of their personal experience in working with a team of wildlife conservationists abroad and applying and developing their skills in a new situation. It has also given them the new experience of working field conservation and benefits Chester Zoo through their increased experience that can be communicated to other staff members and our public. The conservation mission of Chester Zoo then becomes real to our keepers and not abstract. They can really say that they have helped save the Echo Parakeet from extinction.

The Mauritius Wildlife Foundation is very happy with the close relationship that has developed with Chester Zoo and the other collections in developing this project. In the 1980s the Echo Parakeet was regarded by many as a hopeless case, but due to the international effort described above and the close involvement of the National Parks and Conservation Services on Mauritius, this has become one of the most successful parrot restoration programmes in the world and provides an important example for the conservation of other endangered parrots.

Acknowledgments

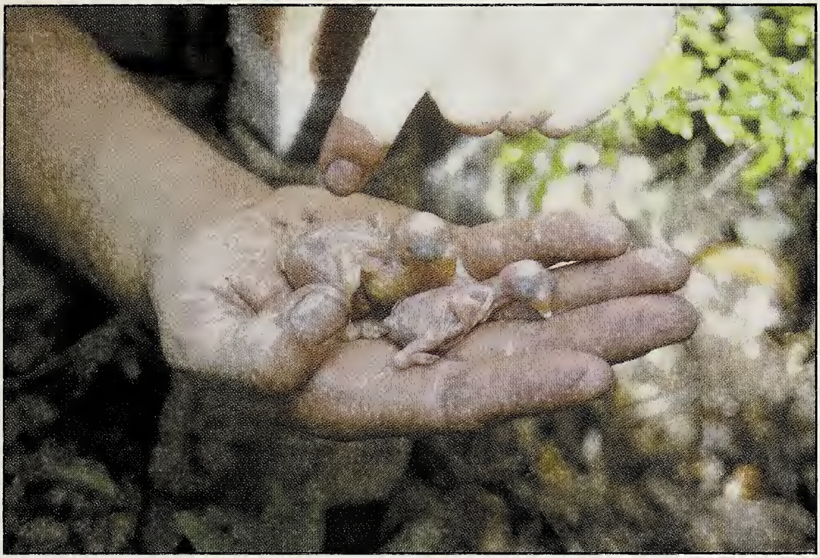
I am grateful to Carl Jones, who has been instrumental in saving many Mauritian species from extinction, for correcting and adding to a previous version of this article. I also wish to thank Paul Morris, Anne Morris and Clare Daniel for information on their experiences whilst seconded on Mauritius. The whole Echo Parakeet team, past and present, deserve our



Roger Wilkinson

Male at pole-mounted hopper containing commercially manufactured parrot pellets.

thanks for working against all odds and under often arduous conditions, to ensure the survival of the Echo Parakeet in the forests of Mauritius. Finally thanks to the Durrell Wildlife Conservation Trust, Chester Zoo, Paradise Park, Adelaide Zoo, the World Parrot Trust, Loro Parque Fundación and the many other supporters, with apologies to those not named, that have enabled this conservation work to proceed.



Roger Wilkinson

One and four-day-old Echo Parakeet chicks.

Roger Wilkinson

Paul Morris radio-tracking released Echo Parakeets.

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Dr Roger Wilkinson is Head of Science and Conservation, Chester Zoo, Upton-by-Chester, Chester CH2 lLH, UK. Roger is an Avicultural Society Vice President.

SPRING SOCIAL MEETING 2007

Saturday, March 31st, the Avicultural Society will visit Waddesdon Manor, near Aylesbury, Buckinghamshire HP18 0JH.

BREEDING THE ELEGANT CRESTED TINAMOU
Eudromia e. elegans

by Bryan Andrews

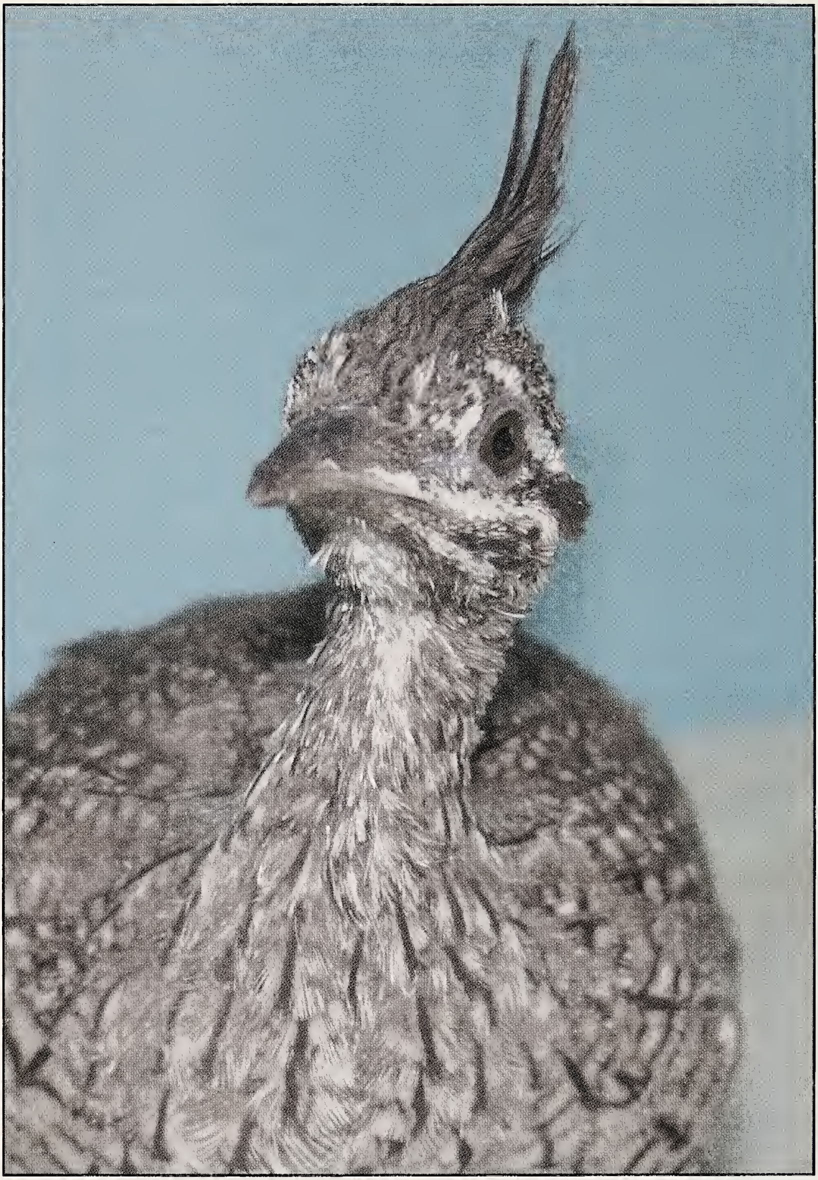
Living in West Wales, just a few miles (kilometres) from Phil Cleeton of C&J Bird Brokers, enables me to call in on a regular basis to see his fresh imports. These are mainly softbills, but on one such visit I saw and purchased two juvenile Elegant Crested Tinamou, that had been captive-bred in Europe. The Elegant Crested Tinamou is found throughout Argentina and Chile. It is one of 46 species of these ground-dwelling, omnivorous species, that range in size from that of a quail to that of a guineafowl. They inhabit arid and semi-arid grassland, dry savannah and open woodland, favouring open sites. Thought of as a primitive group of birds, they appear to be closely related to the ratites, the tinamous having strong legs and feet that lack a hind toe (Davies, 2002).

The half-grown birds I had purchased grew well and turned out to be a true pair. They were housed in a well planted aviary, that they shared with pairs of Crested Wood Partridge *Rollulus roulroul*, Schalow's Wheatear *Oenanthe schalowi* and a group of six White-headed Mousebirds *Colius leucocephalus*. The tinamous never roosted in the sleeping quarters, which had heating and lighting, but instead slept in a shallow scrape in the only uncovered part of the aviary. They roosted there even during the worst weather.

Over the Christmas 2005 period, four eggs were laid in a deep scrape. Because of the poor weather they were removed for artificial incubation and were measured, weighed and photographed. On the 10th day they were candled and all four proved to be infertile.

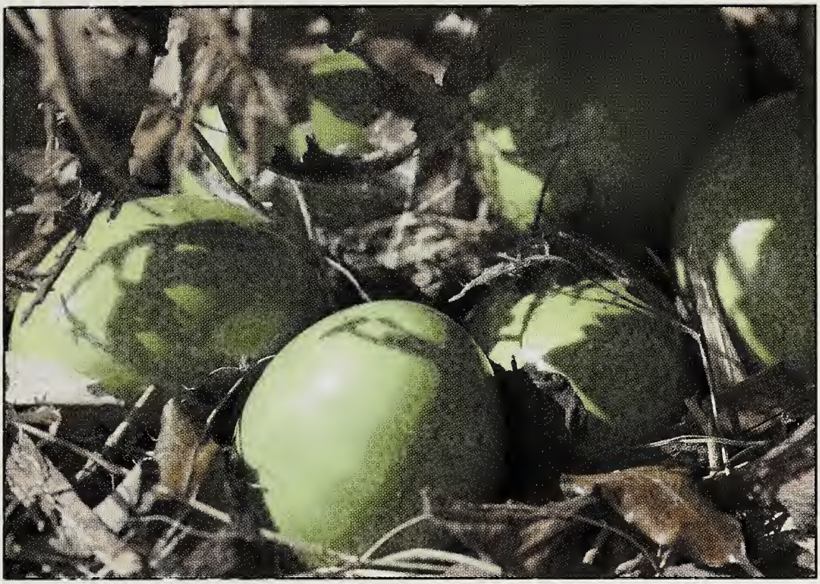
Both tinamous came through the winter without any ills, enjoying a diet of diced mixed fruits, Beapher softfood and Puik wild birdseed with added chopped peanuts. A couple of buckets of sand mixed with crushed oystershell provided them with a play area into which a number of mealworms were thrown each morning, and both the tinamous and the partridges spent time hunting for them.

The tinamous started the 2006 laying season on April 6th, using the same scrape as before. This is at the base of a very large *Japonica* shrub. As no attempt was made to conceal the eggs, I was able to keep a close check on them and remove each fresh egg as it was laid and replace it with one of the eggs from the earlier infertile clutch, hoping as I did so that the female could not count beyond four! I used Brinsea Octogon 20 incubators run at a temperature of 37.6°C (99.7°F) and a wet bulb reading of 60%-65% for the first 16 days, which was raised to 70%-75% for the remainder of the



Sarah Lewis & Bryan Andrews

Elegant Crested Tinamou.



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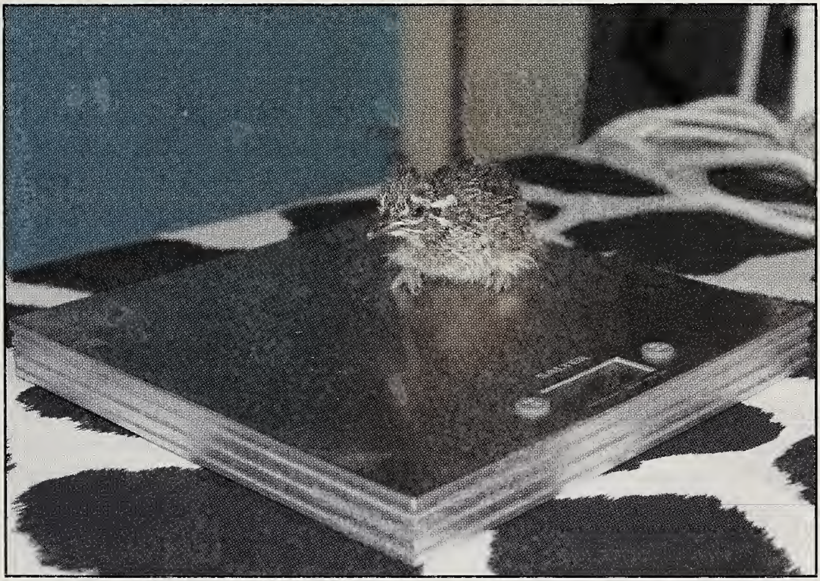
Distinctively coloured eggs of the Elegant Crested Tinamou.



Sarah Lewis & Bryan Andrews

This photo gives an idea of the size of the chick .

Sarah Lewis & Bryan Andrews

Taking mealworms from the hand.

hatching period. The incubation time varied from 18-21 days, with the heavier chicks being the earliest to hatch (see Table 1). The egg colour, as seen in the photograph (p.113), never varied, but there was a slight variation in both the dimensions and the weight of the eggs, although these differences did not correlate with the hatching weights of the chicks.

The chicks hatch fully feathered and with the crest already visible (see photo p.113). As can be seen in Table I, all did not go well at the start of rearing, which was due to the reluctance on the part of the chicks to take any of the foods offered, which included micro crickets and skinned mealworms. The breakthrough came when I started to force-feed the chicks at two-hourly intervals with soaked trout pellets. These seemed to do the trick and by day five the chicks were playing with compound crumbs that had been dressed with livefood. The preferred dry food was a pin-head sized compound that I had purchased in Singapore. Made by a company called 3 Coins, it is used by bird keepers there to feed their white-eyes *Zosterops* spp. This tiny compound is made from green peas, soya beans, black beans, unpolished rice, sugar, proteins and vitamins. So far I have been unable to find it here in the UK.

By the second week, the chicks were hunting down medium-sized crickets and eating a few mealworms each day. I think I may have overdone the amount of protein provided for two of the chicks as both suffered from slight angel wing. This was easily corrected using micropore tape left on

Table 1. Eggs and chicks hatched in incubator.

Egg	Set	Hatched	Weight	Remarks
1	8.4.06	-	-	Infertile
2	8.4.06	26.4.06	31g	Hand-reared
3	12.4.06	30.4.06	32g	Died at seven days
4	14.4.06	3.5.06	30g	Died at five days
5	17.4.06	5.5.06	32g	Hand-reared
6	26.4.06	15.5.06	30g	Angel wing
7	26.4.06	17.5.06	28g	Hand-reared
8	26.4.06	15.5.06	30g	Angel wing
9	30.4.06	21.5.06	27g	Hand-reared
10	4.5.06	25.5.06	27g	Hand-reared
11	4.5.06	24.5.06	30g	Hand-reared

the wings for seven days. A second school of thought suggests that rearing chicks under a white light contributes to this problem. So, perhaps it was more than coincidence that these were the only two chicks reared under a white light.

All of the chicks were by then eating softfood and a mixture of finely diced soft fruits, along with seed.

Having reared enough chicks for my purpose, I now plan to leave the male to incubate any further eggs, and hope to report that he managed to hatch and rear the chicks, assisted perhaps by the female (as is the way with tinamous).

Reference

Davies, S. J. J. F. 2002. *Ratites and Tinamous*. Oxford University Press, Oxford, UK.

BREEDING THE WHITE-HEADED MOUSEBIRD
Colius leucocephalus

by Bryan Andrews

In February 2005, Phil Cleeton of C&J Bird Brokers imported, amongst a number of other birds, some White-headed Mousebirds, six of which were obtained by me. They arrived in fine condition, with full tails; these being twice the length of the body are not always so complete.

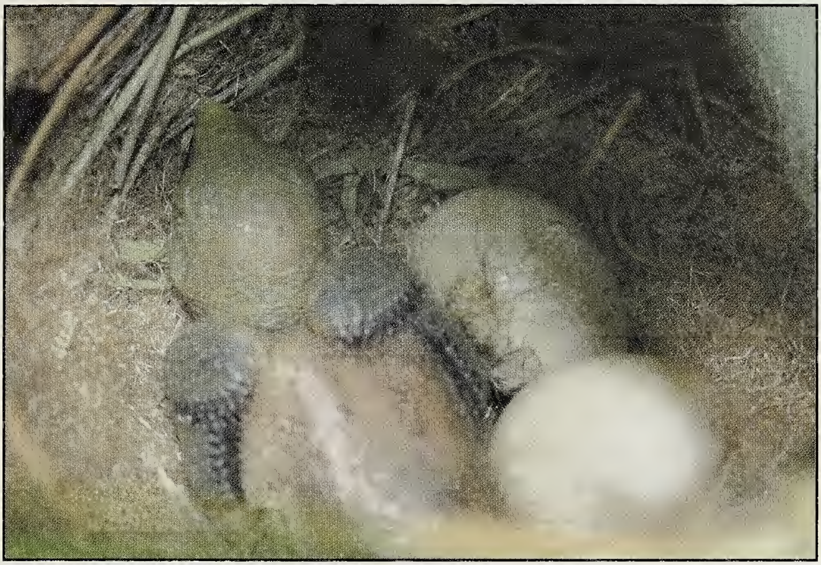
Sarah Lewis & Bryan Andrews

Two females sitting on the same nest.

I housed them indoors, keeping them at a temperature of 73°F (22.8°C), in an all-wire suspended cage. In the spring of that year they were moved to a 9ft x 3ft x 6ft (approx. 2.7m x lm x 1.8m) planted aviary with a sleeping box, with heating and lighting in it. The box was rarely used, the birds preferring instead to spend the nights hanging in a cluster from the roof netting, until the morning sun brought them out of their torpid state.

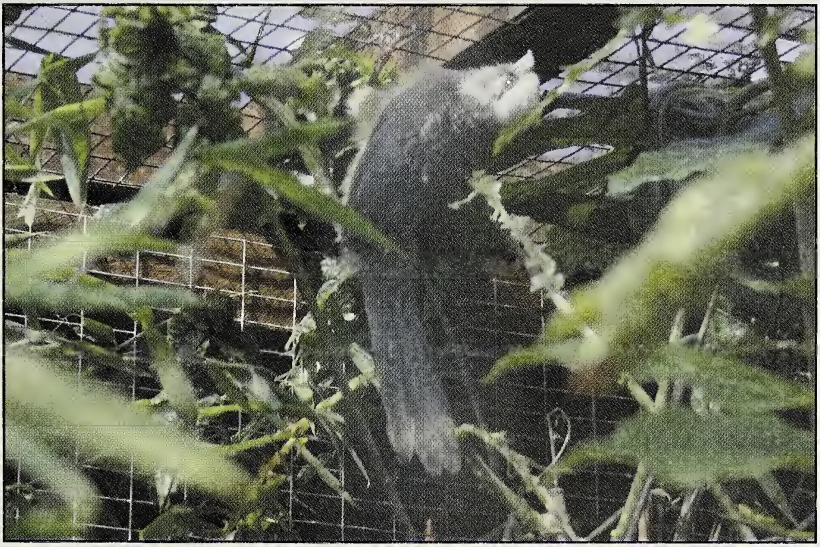
Housed on their own, they were offered and ate the same softbill diet as my other birds. This consisted of diced fruit, Bogena Universal and chopped greens, with sliced papaya (pawpaw). I should add here that since January 2006, following constant nagging by Phil Cleeton, I now feed all fruits and vegetables halved not diced.

At the beginning of June, all six mousebirds were seen feeding each other and showing great interest in the canary wicker nest pans placed amongst fir cuttings and bamboos. They would add to and take away fresh



Sarah Lewis & Bryan Andrews

Chicks and eggs in nest built in fine-leaved bamboo.



Sarah Lewis & Bryan Andrews

The length of the young mousebird's tail is still only approximately two-thirds the length of the adult birds' tails.

greenery they had placed in the pans daily. With no visual way of sexing the six birds, I just let them get on with it. They would feed and groom each other and I would find them sitting in different nests each time I looked.

On making a closer inspection in mid-July, I found that two of the nests each contained two eggs. Prior to leaving for a month-long stay in Indonesia with my partner, young were being fed by the adults. However, while in Singapore, we received a phone call to say that the birds in the aviaries back home in Wales were being bothered by a Sparrowhawk *Accipiter nisus* and that the commotion it had caused had resulted in the loss of the young mousebirds.

No further nesting attempt was made and on our return I moved the mousebirds into an unheated indoor flight for the winter.

At the start of April 2006 the mousebirds were moved to an outdoor aviary that was densely planted with bamboo and a number of large shrubs. They shared the aviary with Elegant Crested Tinamou *Eudromia elegans* and Gambel's Quail *Lophortyx gambellii.* The planting of the aviary made viewing of the nests extremely difficult. However, on June 5th, I was able to see two mousebirds sitting tightly on separate nests, one was in a canary-type nest pan and the other was on a beautifully woven nest that the birds had made themselves. It was approximately 5ft (1.5m) above the ground in the centre of a fine-leaved bamboo. This is the nest shown in the photo on p.117. The photos were taken after I finally plucked up enough courage, and against all the rules, ventured into the undergrowth and photographed the two nests, which between them contained a total of three eggs and four chicks. I had no way of knowing which bird had laid which eggs in which nest. Plus, I understand that females will share nests and both birds will sit on the eggs, as can be seen in the photo on p.116, taken during the 2005 breeding season.

I can vouch for the fact that all the adult group take part in the feeding and preening of the young, as the four fully-fledged young could be viewed in food-passing sessions. With their body size now, at the time of writing (July 2006), not so different from that of the parent birds, it is only by looking at the length of their tails that I can tell them apart, the length of the young birds' tails being approximately two-thirds of the length of the tails of the adults.

I realise that this is a poorly documented study of these birds, given that it may well be the first breeding of this species in the UK. However, at least two of the adults have gone down again and next year, following my retirement, I will have time to make a more detailed study.

As described above, the White-headed Mousebird *Colius leucocephalus*, has been bred by Bryan Andrews. This is believed to be the first breeding of this species in Great Britain or Ireland. Anyone who knows of a previous breeding is asked to inform the Hon. Secretary.

BREEDING THE BLACK-CAPPED SOCIAL WEAVER *Pseudonigrita cabanisi*

by Martin Davies

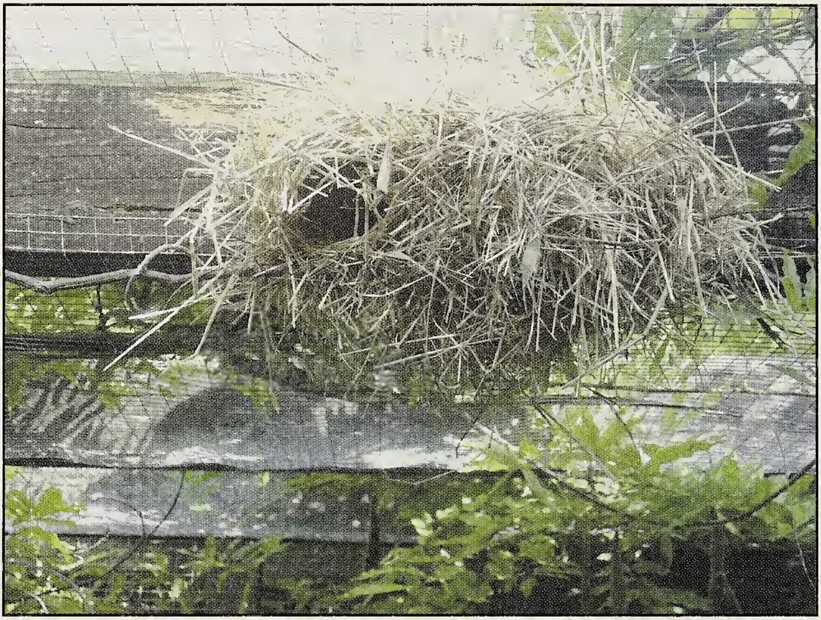
I acquired eight Black-capped Social Weavers in April 2006, with the aim of trying to establish a breeding colony, given that we are unlikely to see this species imported again. Within days I had sadly lost two of them. The remaining six seemed robust and soon settled into a planted flight measuring 11ft x 10ft x 8ft (approx. 3.5m x 3m x 2.4m). I noticed the birds beginning to establish a pecking order with the alpha pair soon heading up my potential breeding colony. As I had never seen this species before I found the behaviour of the birds fascinating. They communicated with each other using a wide variety of calls, consisting mostly of loud squawks and chattering. They would greet each other en masse with head bobbing, tail quivering and a great deal of excitement. Much of their time was spent together, perching and following each other in flight, and only separating when they foraged on the aviary floor. Although they are coloured black, white and brown, they are quite striking looking birds and for weavers, became very steady once settled into their surroundings. Plumage-wise the sexes look alike but males and females do differ slightly in size and when observed for some time, behaviourally the differences are more apparent, with the males being much more confident and 'pushy', especially where livefood is concerned.

Feeding

I fed the birds a good quality seed mixture for finches, with a high millet content, together with mealworms, waxworms and various fruits (all of the latter were ignored, except for the apple) and a commercially available softbill mixture. Grated cheese, carrot and the usual softbill fare were steadfastly ignored.

Breeding

In early May, with the colony well settled in, I started to provide various types of nesting material such as hemp teasings, dry hay, small twigs and coconut fibre, but to my great disappointment, the birds made only half-hearted attempts at nest building. I remembered that when I had been in South Africa most of the weavers that I saw had started building individual nests using green material and not the dry material that I had provided up until then. So, I supplied them with some long stems of grass. These got them going with a little more enthusiasm, but again they soon gave up. In despair, I phoned Mike Curzon, to ask if he could offer me any advice? He

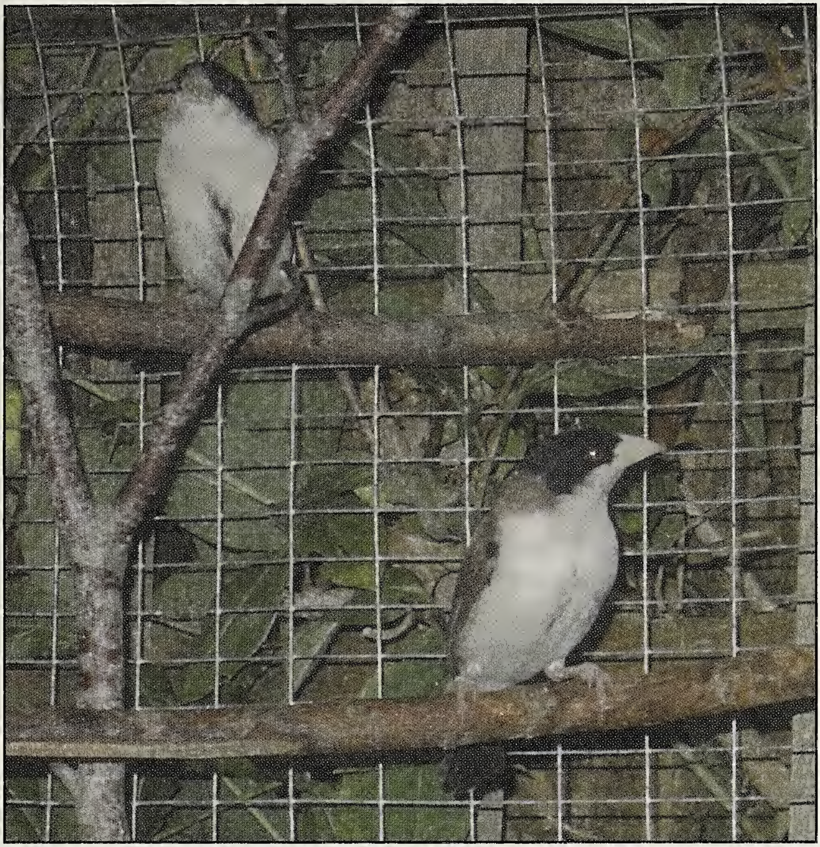


Martin Davies

Nest built by Black-capped Social Weavers.

consulted a reliable field guide and confirmed that they make individual nests rather than a single colonial nest. Despite the advice, however, it occurred to me that they might build colonial nests just for roosting purposes when not breeding and that this might bond the colony together and make it feel more settled. So, I placed in the flight, two hanging baskets stuffed with hay. These produced an almost immediate result. The birds became very excited and chattered away to each other, using calls I had not heard them use before. They began to fashion tunnels into the mass of hay and over time, they built individual compartments in it. I provided more hay and they just kept adding to the structure until it became quite substantial. I kept disturbance to a minimum and only entered the flight to feed the birds. Therefore, I had no real idea whether or not they were breeding. Furthermore, my work commitments at the time meant that I had little leisure time to observe them. I had though noticed copulation occurring.

In early June we had some very inclement weather and on visiting the flight one morning to feed the birds, I found one of them dead. This reduced the number of birds to five. As the weather improved and time moved on the remaining birds became more interested in each other and began to increase their consumption of any livefood in their flight - waxworms and fruit flies being favourites. About this time I noticed one pair in particular becoming very territorial over their area of the communal nest and my hopes



Martin Davies

Pair of adult Black-capped Social Weavers. The sexes differ slightly in size and the male is much more confident than the female.

began to rise. The only concern I had was that I was due to go away on holiday for two weeks and was worried that any extra care that might be needed would not be fully catered for in my absence. I need not have worried, as on my return I was greeted by the sound of a nestful of young social weavers. I was sorely tempted to look into the nest, but resisted the temptation. The youngsters' "chirping" was faint, so I thought they must have hatched very recently. As the days passed, the "chirping" remained faint and I started to worry that the chicks were not getting enough sustenance. So I tried to reintroduce more variety into the diet, by providing grated cheese, carrot and hard-boiled egg, but all were ignored again. My worries proved to be unfounded, as on July 24th when visiting the flight, I found two young fledglings getting used to their new home. They were smaller, very pale versions of the adults and were very flighty, and were flying at the wire. The parents and the unpaired adult bird fed the youngsters and at night they all returned to the nest to roost. Shortly after their first outing, they returned to the nest and remained there for several days before venturing out again into the flight. The fledglings then began to investigate the feeding pots and settled down over several days, becoming steadier as they familiarised themselves with their surroundings.

At this time there was a change in the behaviour of the non-breeding members of the colony. They left the colonial nest and started to make their own nest, which is identical in shape and size to the image of the nest I found on the internet and is like the nest described to me by Mike Curzon. It is now, at the time of writing (August 2006), occupied by the other pair and I assume there are eggs in it.

I will endeavour to establish links with other keepers of this fascinating species - at present, I know of only one other. As we are unlikely to see the import ban lifted, I feel that as bird keepers, we now have a responsibility to specialise in such species, to ensure as wide a variety of species as possible remain available for the future.

Martin later confirmed that there were a further three young, but they were lost during a heavy rainstorm, after which the weather turned cooler and the birds contented themselves by making nest repairs, but did little else.

As described above, the Black-capped Social Weaver *Pseudonigrita cabanisi*, has been bred by Martin Davies. This is thought to be the first breeding of this species in Great Britain or Ireland. Anyone who knows of a previous breeding is asked to inform the Hon. Secretary.

Martin Davies is a UK member living in Wiltshire.

* * *

BREEDERS' REGISTER

Andrew Owen of Waddesdon Manor aviaries is setting up a *Breeders' Register* of keepers (breeders) of the Chestnut-backed Thrush *Zoothera dohertyi*, with the aim of trying to establish a self-sustaining population of this Indonesian species found from Lombok to Timor. He would also like to hear from anyone who keeps the distinctive Sumatran subspecies of the White-crested Laughingthrush *Garrulax leucolophus bicolor*, which was bred earlier this year at Waddesdon Manor. If you keep either of these birds, or would like to know more, you are invited to contact Head Keeper Ian Hadgkiss or Andrew by telephone at: 01296 653286 or by e-mail: Andrew.Owen@nationaltrust.org.uk

TOO RARE TO COLLECT
THE DISCOVERY OF A NEW SPECIES OF LIOCICHLA

A professional astronomer Ramana Athreya has found a new species of liocichla in a remote part of north-eastern India. He first saw it at Eaglenest Wildlife Sanctuary, Arunachal Pradesh, in 1995. Ramana and his colleagues on the Eaglenest Biodiversity Project returned to the site in late January 2005 and again in May 2005 armed with mist nets, but failed to find the bird again. It was not until May this year that two were eventually trapped. Because of their great rarity, no scientific specimen was collected, instead they were photographed, feather samples were taken and voice recordings made, then the two birds were released.

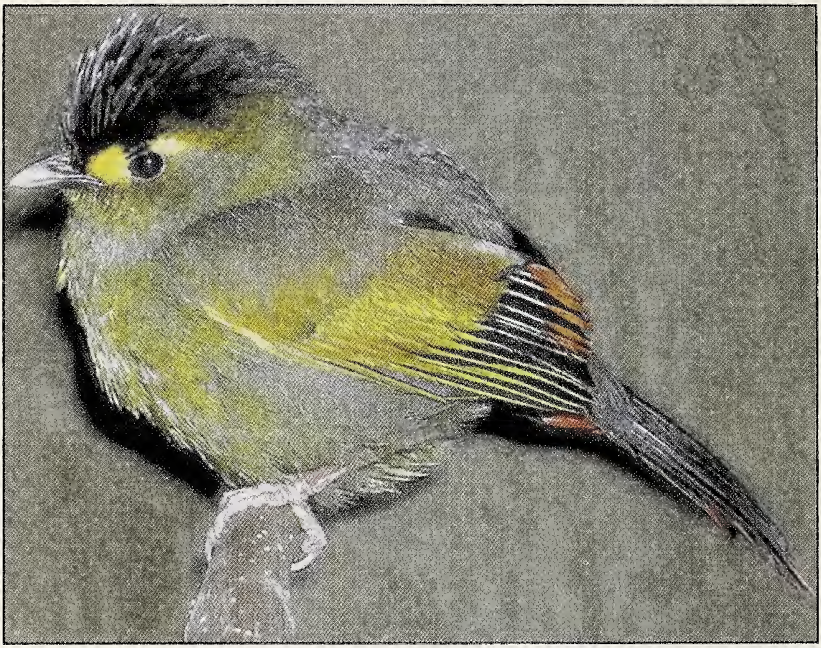
The description of this new species, which has been named the Bugun Liocichla *Liocichla bugunorum* (see photo on following page), and the story of its discovery, were published in the journal *Indian Birds*. Its Editor, Aasheesh Pittie, described the discovery of this new species in a part of the world that has been visited by bird collectors for more than a century, as "nothing short of miraculous."

Dr Nigel Collar of BirdLife International warmly congratulated Ramana Athreya on his outstanding discovery and fully supports his decision not to collect a specimen at this stage. Dr Collar said: "This species appears to be very rare indeed, and from what we know at present the taking of even one individual could jeopardise the Bugun Liocichla's future survival prospects."

The known population consists of only 14 individuals including three breeding pairs. Apparently it is not particularly shy and because of this and its very distinctive appearance, it must be very rare otherwise it would certainly have been found earlier. "It is good news that it has been found in a wildlife sanctuary where it is already protected", said Dr Collar, who added: "A priority now is to find out if other populations of this remarkable species exist elsewhere and what its habitat requirements are, so that appropriate conservation measures can be put in place."

It is probably most closely related to the Omei Shan Liocichla *L. omeiensis*, which is known from only a few mountains in central China, more than 1,000km (600 miles or so) away, where it is found in the undergrowth of primary and secondary forest between 1,000m-2,400m (approx. 3,280ft-5,870ft). It was first bred in the UK by Richard Cockerill in 1993 and subsequently by Andrew Blyth in 1995 and by Nigel Hewston in 1996. A census of known keepers conducted in March 1998 recorded 21 males and 20 females in 10 collections (see *Avicultural Magazine* Vol.107, No.3, pp.109-114 (2001)).

Detailed examination of the Eaglenest birds and comparison with specimens and tape recordings of the Omei Shan Liocichla revealed many



Bugun Liocichla ***Liocichla bugunorum.***

plumage and vocal differences. Comparisons were made possible by reference to skins in The Natural History Museum collection at Tring, which were donated by Avicultural Society members who participate in the EAZA ESB (European Association of Zoos and Aquaria European Studbook) programme for the Omei Shan Liocichla.

There are two other species of liocichla, the Red-faced *L. phoenicea* and Steere's Liocichla *L. steerii*. The Red-faced was first bred in the UK at the Tropical Bird Gardens, Rode (see *Avicultural Magazine* Vol.102, No.1, pp.23-24 (1996)) and by B. Massey in 1991. Steere's Liocichla was first recorded as having been bred in the UK in 1990.

The paper describing the Bugun Liocichla and more photographs of the specimens trapped can be downloaded from: www.indianbirds.in

AL WABRA WILDLIFE PRESERVATION, QATAR: WORKING WITH TURACOS Musophagidae spp.

by Simon Bruslund Jensen

The turacos are a primitive, almost primeval-looking family of medium to large-sized birds, most closely related to the cuckoos. The 23 species are distributed exclusively in tropical African forests and savannahs. Most species are beautifully coloured in shades of green, blue and red, and are well known for their unique feather pigments, the so-called turacin and turacoverin, found only in this family.

Sven Hammer/AWWP

A Prince Ruspoli's Turaco *Tauraco ruspolii* approaching a waterhole close to Arero, Ethiopia.

Due to their appealing appearance, many of the species have for many years been popular in zoos and private collections. However, just a few years back, captive breeding would never have been considered as an option for the conservation management of turacos, as they had long been considered as delicate and rather difficult to breed in captivity.

In recent years the methods used for keeping and breeding turacos have improved a great deal, due largely to the systematic approach by dedicated individuals and public collections such as the zoos in Cologne, Germany and Houston, Texas, USA. Now for the first time, it seems possible to establish self-sustainable captive populations, in particular within the framework of regional and international cooperation, with studbooks being maintained to ensure the necessary exchange of bloodlines.

This is in line with the identification of more and more threats to several turaco species in the wild, especially to some of the unique subspecies with limited distribution. Al Wabra Wildlife Preservation (AWWP), owned by Sheikh Saoud Bin Mohammad Bin Ali Al-Thani, has had a long standing interest in improving our knowledge of some of the lesser known species and subspecies, and has decided to invest resources into the turacos as a group, with initial emphasis on two species, one *in situ* and the other *ex situ*.

The goals of AWWP were to investigate the current status of the little known Prince Ruspoli's Turaco *Tauraco ruspolii* in Ethiopia and simultaneously develop captive management strategies for turacos using a common species, the Violet Turaco *Musophaga violacea* of West Africa, as a model.

Prince Ruspoli's Turaco (*in situ*)

AWWP has coordinated and funded research on Prince Ruspoli's in Ethiopia, which has resulted in major publications on the ecology of its habitat, the juniper forests, and some of the problems this species faces in the wild.

Prince Ruspoli's Turaco, which has a very limited distribution in south-central Ethiopia, remains one of the least known of the turacos. It appears that it is strongly connected with the endemic juniper forest found in this region. For a long time the limits of its distribution remained undefined, as did its ability to adapt to other types of habitat. It was believed that the juniper forests were subject to a number of threats, including from large numbers of feral goats, along with humans cutting down trees for much needed firewood. Furthermore, there had been sightings of possible hybrids between Prince Ruspoli's Turaco and the more common White-cheeked species *T. leucotis*, that normally occurs further north in Ethiopia, isolated from the juniper forests.

In 2003 AWWP employed Italian biologist Luca Borghesio to answer some of these questions and if possible investigate what could be done to secure the future of Prince Ruspoli's Turaco and its habitat. He put together a research team in order to undertake an expedition to Ethiopia, in cooperation with the Ethiopian Wildlife Natural History Society and the Ethiopian Wildlife Conservation Organisation.

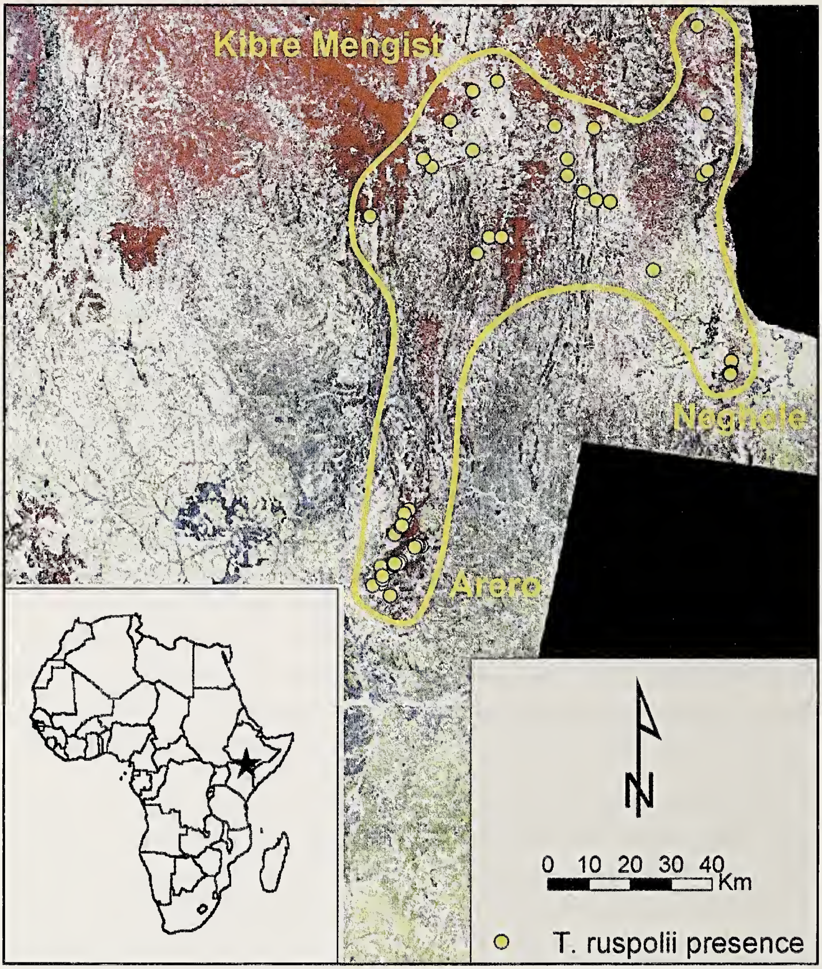
One of Borghesio's first tasks was to identify the extent of the juniper forests and the decline that had occurred in the past decades. This was done with the help of satellite images taken by the US military. Images covering the entire region were purchased and after visiting the forest the specific signatory structure of the undisturbed juniper forest was compared to that of destroyed forest, as well as that of other types of forest cover. This data was then correlated to their specific coordinates on the satellite maps. The process revealed an exact picture of the juniper forests in the entire region, as well as giving clues to their status. The field expeditions also wanted to determine if the turacos did in fact occur only in specific habitats. Results were a little inconclusive, as the field work was cut short by Ethiopian bureaucracy and our research permit being revoked. However, it was possible to determine that Prince Ruspoli's Turaco was present also on the fringes of its preferred habitat. In addition, it was proved that hybrids between Prince Ruspoli's Turaco and the White-cheeked species exist where the two meet. Based on historical data on the distribution of the White-cheeked Turaco and the fact that so far only a few hybrids have been observed, it is fairly certain that this is a recent development.

Our studies proved that the density of Prince Ruspoli's Turaco was larger than expected, especially in suitable habitat, but also that this habitat is shrinking at an alarming rate. The massive loss of habitat may be what causes Prince Ruspoli's Turaco to move into other habitat, where it comes into contact with the White-cheeked species, with the result that hybrids sometimes occur. Or, it may also be possible that the juniper forest is changing due to human activity causing deforestation. Another reason may be that the planting of non-native and taller trees is allowing the White-cheeked Turaco to encroach into traditional Prince Ruspoli's Turaco habitat. The long-term effects of hybridization are unknown and will need further studies.

Our studies provided conclusive evidence to validate a recommendation to the IUCN/BirdLife to re-evaluate the threat status of Prince Ruspoli's Turaco and to consider elevating it from Vulnerable to Endangered status.

The field trips also gave us a better understanding of some of the humanitarian problems in the region. The lack of firewood is a major problem for the local people, as is the lack of surface water, which makes it difficult to cultivate the same areas of cleared land over a number of years. Amongst the local people there is little understanding of the uniqueness of their forests, therefore they cut down the trees indiscriminately and replant with introduced species, leaving little space and food for the endemic fauna. The feral goats remain uncontrolled and destroy forest even in isolated places. In particular, they apparently damage the ground by impacting the soil, making it difficult for juniper trees to grow. Large scale erosion is evident in places where the forest has been cleared.

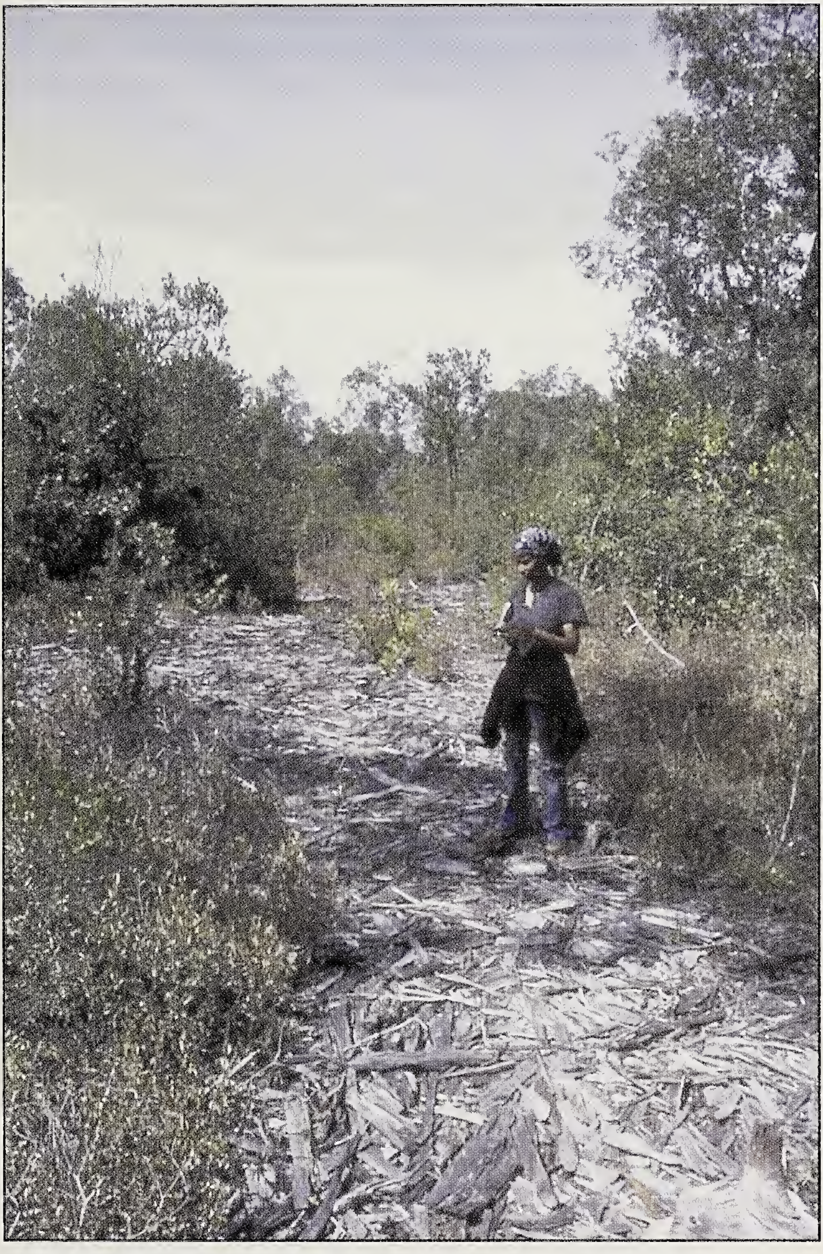
The only way it will be possible to counter some of these problems, will be to help the local people to develop the region and make better use of available resources and at the same time improve their appreciation of their unique forests. It may be possible to make better use of the farmland by



LANDSAT satellite image of survey area January 2002. Yellow spots indicate the known presence of Prince Ruspoli's Turaco and the yellow line bounds its estimated range. Forested areas are coloured red and *Acacia-Combretum-Terminalia* woodland blue-green. Transitional habitats between forest and woodland are selected by this turaco.

pumping up underground water and by controlling the goats. More effective ways of burning wood can also be introduced. There is, for example, a simple metal stove that compared to the traditional open fireplace, reduces by half the amount of wood needed to boil water.

North-eastern Africa, including large parts of Ethiopia, seem to be inescapably affected by global climate change, that is directly influenced by humans. In few regions of the world are the direct effects as visible as here,



Remnant forest near Negele, on the southern edge of its range. Mankubsa Forest has been destroyed in less than 15 years and the presence of Prince Ruspoli's Turaco in the area is severely threatened. It was still observed there in February 2003 in isolated groves of trees which had been spared deforestation.

with ongoing droughts and failing rains, as well as increasing temperatures. How this is affecting the region in which Prince Ruspoli's Turaco lives is unknown, but it is certainly an additional factor that warrants ongoing monitoring (Flannery, 2005).

Violet Turaco (*ex situ*)

AWWP is using the Violet Turaco as a model species to identify the needs of turacos in captivity and to learn how they respond to the conditions available. With this information we can then continuously develop better captive management guidelines and determine if it is feasible to consider captive management and 'conservation breeding' for endangered species of turaco. The purpose of this is to develop self-sustainable captive populations to ensure the survival of endangered species such as Prince Ruspoli's Turaco, which is currently not being maintained in captivity. Should it become necessary, such populations could function as an invaluable back-up and a research resource.

The Violet Turaco is a typical bird of gallery forest, often found in the more lush growth of trees along rivers and creeks, as well as the margins of forests. Its general behaviour is similar to that of most other turaco species including, at least so we expect, Prince Ruspoli's Turaco. It feeds mainly on fruits especially figs and occasionally eats insects, having a particular liking for swarming termites.

Turacos are most frequently observed in pairs, but may occasionally be seen in small groups, especially around favoured feeding trees and water sources. At other times turacos are territorial birds that loudly proclaim their presence in their territory and perform visual displays that often involve their vividly coloured wings. Their nests, which are mostly fragile platforms of sticks often placed in thick foliage, are not unlike those of pigeons. Typically one to two eggs are laid and are incubated by both birds. The incubation period of the Violet Turaco is longer than that of most other species, being 24-26 days, rather than the usual 18-21 days. The young of all turacos leave the nest very early, at less than three weeks old and even before they can fly. They climb around in the nesting tree using both their claws and their wings to hold on. In the wild the Violet Turaco has been known to occasionally be assisted at the nest by helpers, thought to be young from previous clutches. Such behaviour has not been recorded among most of the other turacos.

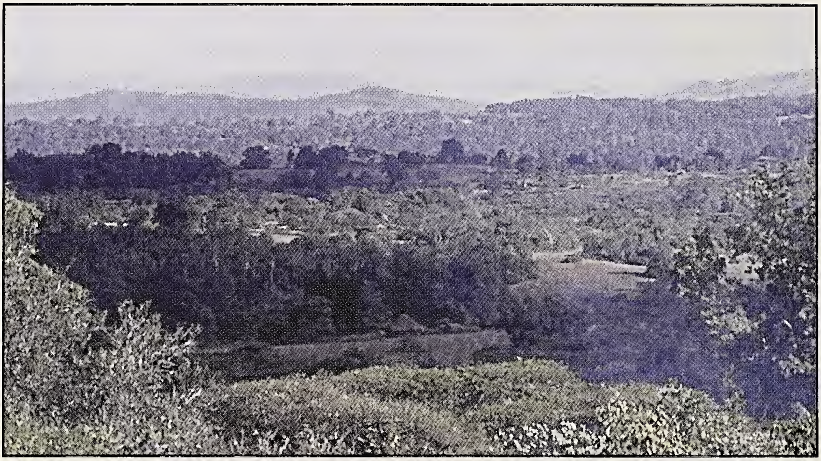
The captive population of Violet Turacos at AWWP is based on two founder pairs. Between 2000-2005, 22 young were hatched of which 13 were parent-reared and nine were hand-reared. In total we had 12 mortalities of birds less than six months old, equally distributed between hand-reared and parent-reared birds.

The turacos have been kept in a number of different set-ups, leaving us with a fairly good idea of their optimal housing requirements. Violet Turacos are easily disturbed by other birds of different species when kept in a mixed species aviary and are particularly disturbed by others of their own species, even when kept in neighbouring aviaries. It is therefore advisable to keep breeding pairs secluded from other turacos and preferably some distance away to avoid stress caused by other turacos' loud territorial calls. Attempts to keep non-breeding birds in groups for any length of time have consistently failed, both in small aviaries and in very large free-flight aviaries, even in the case of relatively young birds. However, on one occasion an unrelated trio, consisting of one male and two females, lived together in the large free-flight aviary, with all three together attending and fiercely defending a nest. So far they have failed to rear any offspring, which may very well be related to the competition from other birds in the aviary. Normally attempts to keep more than two birds together result in aggression at some point, but two birds, even if they are the same sex, normally get on well together without any problems. For breeding, largish aviaries 8m long x 5m wide x 4m high (approx. 26ft long x 16ft wide x 13ft high), that are well-planted and provide plenty of hiding places and shade, have proved most successful. The nest baskets are placed high in the aviary and the birds are provided with artificial rain several times a day.

Adult Violet Turacos seem to adapt well to the climatic conditions in Qatar, both in the blazing heat of the summer when the temperature may reach up to 55°C (131°F) and in the winter when the night time temperature drops to 5°C (41°F). However, young birds, particularly nestlings, suffer in the heat and the eggs do not hatch when it becomes too hot, so an air-conditioned shelter is a big advantage.

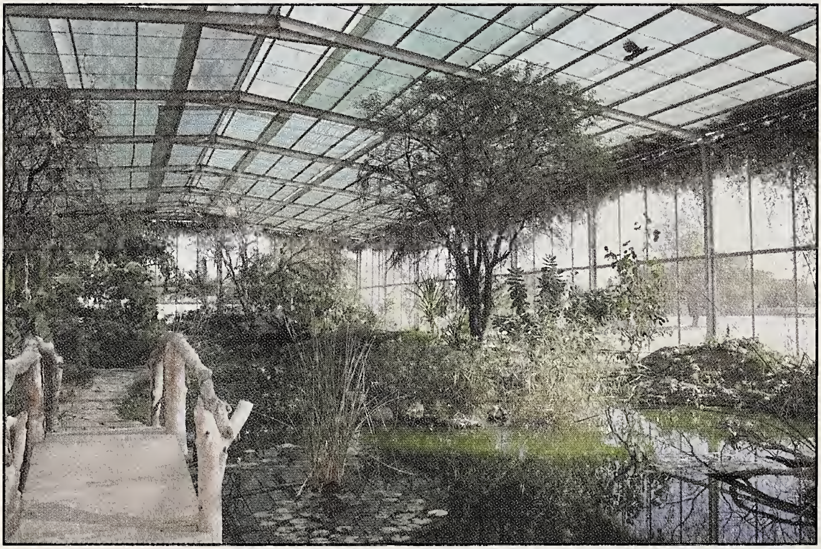
The turacos are somewhat nervous in disposition and even tame, hand-reared birds, are easily flushed and frightened. This is particularly true of birds that are new to an aviary, and we have seen a few birds with injuries and even fatalities as the result of flying against the mesh. By using mesh that is flexible this risk is much reduced. Being careful and quiet around cages and aviaries with recently transferred birds is also important. Turacos are also nervous when being handled and holding them for too long, particularly in hot weather, should be avoided. Attention should also be paid to the fact that turacos are apt to struggle a lot when being held, and are loose feathered, making them difficult to hold on to.

Turacos can be tough on each other and on several occasions we have suspected aggression by the adult male towards fledglings. It can be an advantage to remove the young early if aggression is suspected. The fledglings can be placed in a neighbouring cage or in a small cage in the aviary, and the parents will often continue to feed the young through the



Luca Borghesio

Transitional habitat between *Juniperus-Podocarpus* forest and *Combretum-Terminalia* woodland just south of Kibre Mengist. Up to 10-20 Prince Ruspoli's Turacos can be seen in a day, but the habitat is changing rapidly, seemingly in favour of the White-cheeked species.



Catrin Hammer/AWWP

The largest holding facility for turacos at AWWP is 1,800 sq m (approx. 19,375 sq ft), but can only hold three turacos without aggression occurring sooner or later.

mesh. With many turaco species, males have been known to kill their mates, so care must be taken to provide plenty of potential hiding places, not just low down but also at the higher levels of the aviary. It may be worth mentioning that the courtship behaviour of turacos often includes a ritualized

Simon Bruslund Jensen/AWWP

Five days old Violet Turaco being fed using a syringe.

Simon Bruslund Jensen/AWWP

Adult pair of Violet Turacos calling in duet.

chase, that may become aggressive if the birds are confined in too small an aviary and if no hiding places are available. Sliding doors between adjacent aviaries is a good idea, as it provides the option of separating birds for short periods without causing too much disturbance; it is also useful when pairing up or flocking birds.

At AWWP the turacos' diet consists mainly of fresh fruits. Banana, pear and papaya (pawpaw) are fed daily, with apple, mango and grapes, as well as a number of local seasonal fruits, being added to the diet to provide variety. We also offer them greenfood in the form of parsley and occasionally dandelion leaves. In addition the birds are offered small amounts of a dried insectivore mix in the morning and Hill Mynah pellets (fed dry) in the afternoon. A few mealworms are normally given once or twice a week only, but can be offered a little more frequently when the birds are breeding. Turacos have a high metabolism and eat large amounts of food and it is important that the vast majority of their diet consists of fruit, of which they will consume more than 100g a day. Foods other than fruit must be restricted otherwise they may cause obesity and other health problems.

During breeding the birds are fed the same diet as usual, except that once chicks are in the nest, larger amounts of food are needed. It may be necessary to feed them several times a day to ensure that fresh food is always available. A breeding pair is very faithful to a successful nest site and will use it over and over again. The nest itself is a very simple collection of a few sticks and twigs and very little improvement is made to it between clutches. Some pairs do not use nest material at all, instead the female lays the eggs directly on the bottom of the nest basket provided. It is though important to provide such birds with some nest material to support the eggs and most importantly to give the chicks something to grip onto. Moving the nest or transferring the birds to another aviary may very well disrupt the entire breeding season. Pairs prefer to use nest baskets placed high in the aviary, preferably in a dark corner. It is important that fine branches are available close to the nest, as the chicks will leave the nest before they are able to fly and will possibly even climb back onto the nest; large branches seem to deter the parents from using the nest site. Most ordinary baskets will be accepted by the birds. We have found that a good size is about 20cm x 20cm (approx. 8in x 8in) and have the impression that baskets with high sides are preferred and birds using them are less sensitive to disturbance; they also prefer to be able to see through the bottom of the basket. Wooden frames 22cm x 22cm x 15cm high (approx. 8½in x 8½in x 6in high) with the bottom made of fine mesh are a good alternative. Violet Turacos are able to breed in their second year; one female at AWWP produced her first eggs when aged one year and five months old.

If eggs have to be removed for artificial incubation, a temperature of

Table 1. Diet sheet.

AWWP basis diet — Amount for one bird per day

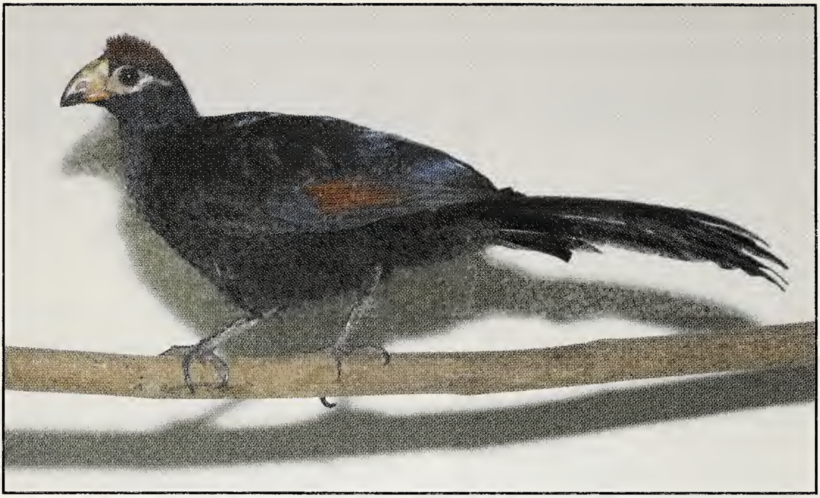
Time	**Items**	**Amount per bird**		Kcal	fibre g	sugar g	fat g	protein g	water g	Ca mg	P mg	VitA µg	VitD IU	Fe mg
am	Banana (sliced)	1/4	= 15g	13.2	0.4	3.1	0	0.2	11.4	0.9	3.0	0.4	0	0.05
	Pear (chopped)	1/3	= 15g	7.05	0.3	1.7	0	0.1	12.9	1.0	1.0	0	0	0.03
	Papaya (chopped)	1/2 slice	= 15g	4.8	0.1	1.2	0	0	13.7	3.6	0.7	6.0	0	0.02
	Other fruit	Few cubes	= 10g	6	0.2	1.0	0	0.1	8.0	1.1	1.3	1.5	0	0.03
	Witte Molen pellets	60 pieces	= 3g	2.4	0	0.1	0.2	2.5	0.3	30	24	36	240	0.21
	Aleckwa-insect	1/4 spoon	= 5g	8	0.9	0.3	1.1	0.9	0.5	-	-	50	50	0.65
	Nekton supplement	1/3 spoon	= 0.3g	-	0	-	-	-	-	0.03	0.02	327	2.4	0.93
pm	Banana, (sliced)	1/4	= 15g	13.2	0.4	3.1	0	0.2	11.4	0.9	3.0	0.4	0	0.05
	Papaya (chopped)	1/2 slice	= 15g	4.8	0.1	1.2	0	0.1	13.7	3.6	0.7	6.0	0	0.03
	Apple (chopped)	1/3	= 15g	7.35	0.4	1.8	0	0	12.6	1.0	1.0	0.3	0	0.02
	Greenfood	2 leaves	= 4g	0.44	0.1	-	0	-	3.4	0.3	0.4	4.8	0	0.03
	Zeigler pellets	50 pieces	= 4g	2.4	0.1	0.2	0.2	0.6	0.4	140	54	93.4	38.9	0.28
Total			116.3 g	69.6	3.0	13.7	1.5	4.7	88.3	182.4	89.1	526	331	2.33
Total %					2.6	11.8	1.3	4.1	76.1					

AWWP supplementary feeding / variation (preferably at am feed) — Amount for one bird per day

Item	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**	**Sunday**
Mealworms		2-3 whole				2-3 whole	
Greenfood	2 leaves	2 leaves	2 leaves	2 leaves		2 leaves	2 leaves
Orange			1/5 = 10g				1/5 = 10g
Grapes		1-2 = 10 g		1-2 = 10g		1-2 = 10g	
Seasonal fruit	10 g				10 g		
Nekton Tonic F	1/3 spoon			1/3 spoon			
Nekton S		1/3 spoon				1/3 spoon	
Nekton MSA			1/3 spoon				1/3 spoon

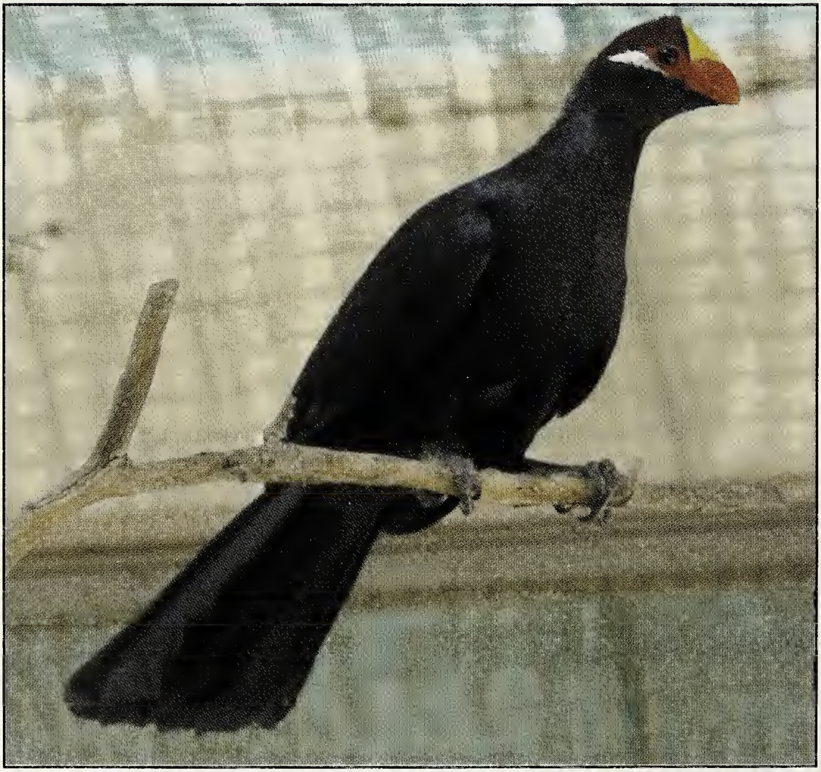
Seasonal fruits including mulberries, guava, canár, plums and figs or alternatively cucumbers or bell-fruits can be offered. **Greenfood** including mainly water-cabbage but also dandelion, spinach, parsley and lettuce is offered in pm feed.

Preparation of food dish: The papaya, banana, as well as soft pear, can be fed in slices or chopped. All hard fruits must be cut into cubes < $1cm^2$. Grapes cut into halves. Aleckwa should be sprinkled over the fruits and pellets placed on the side. Vitamins are sprinkled over the preferred food items.



Simon Bruslund Jensen/AWWP

Immature Violet Turaco hand-reared at AWWP: note the position of the toes.



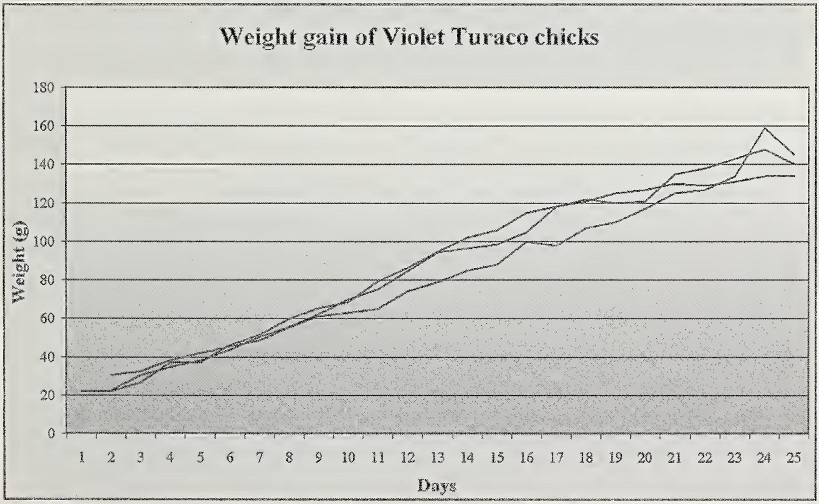
Simon Bruslund Jensen/AWWP

Adult Violet Turaco.

37.5°C-37.8°C (99.5°F-100°F) and a relative humidity of 45%-55% work quite well. The eggs have to be turned five to 12 times a day. Turaco eggs are pure white and very round almost entirely spherical in shape. We have often found them to be relatively fragile without being thin-shelled.

Freshly hatched Violet Turacos chicks are, like those of most turacos, covered with fluffy black down. They open their eyes on the first day and after a week the first pin-feathers emerge on the wings. Chicks being hand-reared are fed fruit pulp mixed with a commercial hand-rearing formula made for parrots, which can be administered through a syringe. Gradually more and more whole pieces of fruit and soaked pieces of Hill Mynah pellets are added to the diet and can be offered using forceps at the side. Small amounts of vitamins and minerals have to be added to the mix at all times to avoid any problems with bone development. Young chicks are fed every 1½ hours during a 14-hour day period but are not fed at night when they should be given the opportunity to rest. The feeding intervals are gradually increased to every three hours by about day 20. At this point the chicks can be offered some food in a small bowl placed in the brooder. It is an advantage to wean the chicks early to avoid them becoming imprinted on humans. Just after hatching, the temperature in the brooder should be about 37°C (98.6°F) and then gradually lowered to about 30°C (86°F) by about day 20. Hand-reared young turacos that have received minimum attention become good parents themselves whereas imprinted birds, when they are breeding, often become very aggressive towards humans.

Table 2. Average weight gain of three chicks from day one to day 26.



The average body weight of healthy male Violet Turacos kept at AWWP is approximately 340g (range 315g-360g) and the average body weight of females is 305g (range 277g-354g).

Products mentioned in the text

Aleckwa Honigfutter grob (insectivore food with honey): supplied by Aleckwa Tiernahrung, Germany (website:www.aleckwa.de).

Wittemolen Beo Care Plus Granulate (Hill Mynah pellets): supplied by Wittemolen, the Netherlands (website:www.wittemolen.com).

Zeigler Bird of Paradise Pellet (low iron pellet): supplied by Zeigler Bros., Inc., USA (website:www.zeiglerfeed.com).

Nekton-Tonic F, -S and -MSA (supplements): supplied by Guenter Enderle, Nekton Produkte, Germany (website:www.nekton.de).

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Simon Bruslund Jensen is Curator of Birds at Al Wabra Wildlife Preservation, PO Box 44069, Al Shahaniyah, State of Qatar. Website: awwp.alwabra.com/E-mail:awwp.bird@alwabra.com

Al Wabra Wildlife Preservation (AWWP) is a private institution owned by HE Sheikh Saoud Bin Mohammad Bin Ali Al-Thani. The breeding centre for rare and endangered wildlife, which has state of the art facilities, including climate control and artificial rainfall systems, is located in central Qatar, and appears literally as a lush green oasis in the middle of a stony desert.

BOOK REVIEW

INTERNATIONAL ZOO YEARBOOK
VOLUME 40

Section 1 (pp.1-217) of the latest *International Zoo Yearbook* is devoted to elephants and rhinoceros, it is not until one gets to Section 2 (pp.221-378), The Developing Zoo World, that one comes to three articles on birds.

The first of these concerns the breeding and hand-rearing of Storm's Stork *Ciconia stormi* at the Zoological Society of San Diego. The breeding pair housed off-exhibit at San Diego Wild Animal Park (SDWAP), the subject of the study, produced 34 eggs (two to four eggs per clutch) over the four year period. Twelve young were hatched, eight of which survived. The authors describe the husbandry techniques and courtship, incubation both by the parents and in an incubator, and the growth and development of the chicks. There are photos of chicks at one day, three days, seven to 10 days and at 37 days, plus a growth curve graph.

The second article describes the hand-rearing of a group of Greater Flamingos *Phoenicopterus ruber roseus* for translocation from The Wildfowl & Wetlands Trust (WWT), Slimbridge to Auckland Zoo, New Zealand. WWT agreed to provide Auckland Zoo with 20 hand-reared Greater Flamingos from the Slimbridge flock of 178 birds. The eggs were hatched and the chicks were hand-reared in a pre-export isolation facility, as required by the New Zealand Ministry of Agriculture and Forestry. The authors describe the isolation facility, egg-laying, incubation, housing and development of the chicks (with a graph plotting daily body-mass measurements), feeding (Table 1 lists the ingredients of the diet and Table 2 the average quantities of food given), health monitoring, then the eventual translocation when the chicks were aged an average 55 days (range 33-71 days) and quarantine in New Zealand. One hundred and one days after the first chick had hatched at Slimbridge, 18 Greater Flamingos were transferred to the zoo's African savannah exhibit (two died while in quarantine). It is hoped that the 18 flamingos will become the founders of a self-sustaining population of Greater Flamingos in the Australasian region.

Of greatest interest is likely to be the article describing the reproduction of the Bali Starling *Leucopsar rothschildi* at the Durrell Wildlife Conservation Trust, Jersey. To understand better the reproductive activity of this species, cameras were placed in the nest boxes of six pairs. Details of egg-laying and egg turning were recorded for 16 clutches and incubation data were recorded for 14 clutches.

Forty-eight eggs were laid, resulting in a mean 2.8 eggs per clutch. The mean incubation period was 15.5 days. Of the 23 chicks that hatched, only five birds survived up to 30 days (a mortality rate of 78%). One pair reared three chicks and two others were hand-reared. They fledged at approximately 28 days. The hatching success (23 of 34 fertile eggs, 68%) is said to be consistent with other reports from captivity and the wild. In the wild the average clutch size is three eggs, of which two hatch and usually one chick is reared.

The authors suggest that Jersey's low success rate may have been because the quality or quantity of food was not sufficient; the lack of food in the early morning (the parents did not get their first feed of the day until 8.00am) may also have had a deleterious effect. Food in captivity may lack sufficient variety the authors suggest, and a more varied diet could lead to increased parental interest in foraging and feeding and a decrease in the occurrence of feather plucking.

The Reference Section, Section 3 (pp.381-516), includes a list of the zoos and aquariums of the world and a list of international studbooks, including those for several bird species.

For information on obtaining the latest *International Zoo Yearbook* Volume 40, would-be subscribers are advised to go to the Blackwell Publishing website:www.blackwellpublishing.com/izy

Malcolm Ellis

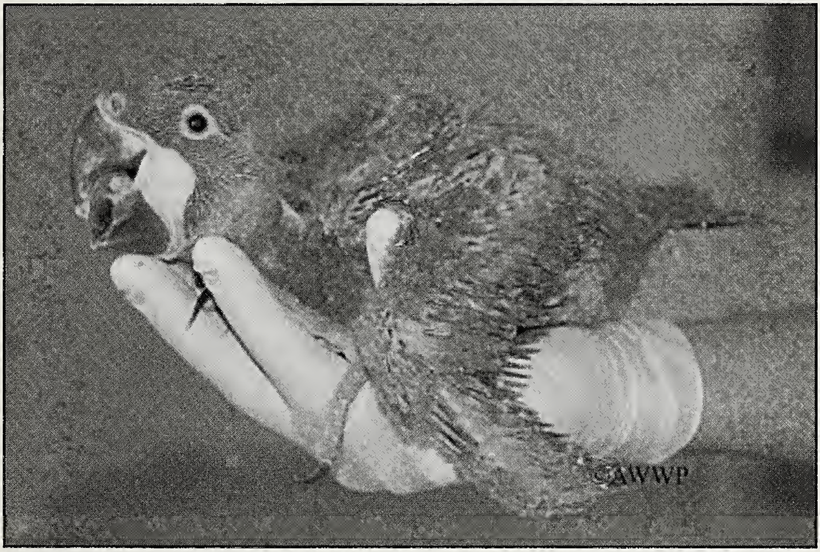
AVICULTURAL MAGAZINE BACK ISSUES

The society has a large stock of back issues mostly from 1935 onwards but there are also some earlier issues still available. They are priced £3.00 each (including p&p). Please check availability before placing an order. Overseas members may be able to pay by credit card through a Paypal invoice, but this service is not available in all countries. All enquiries should be addressed to: P. Boulden, Hon. Secretary/Treasurer, Avicultural Society, Arcadia, The Mounts, East Allington, Totnes, Devon TQ9 7JQ, UK or E-mail:admin@avisoc.co.uk

NEWS & VIEWS

LEAR'S MACAW BRED

Earlier this year, Al Wabra Wildlife Preservation (AWWP) in Qatar, succeeded in hatching its first Lear's Macaw *Anodorhynchus leari*. AWWP has four pairs of Lear's Macaws, which it has had on loan from the Brazilian Government since 2004. This species has proved difficult to breed in captivity and until this recent success, had not been bred successfully officially since 1984.



Copyright AWWP

Lear's Macaw chick aged 34 days.

AWWP's breeding pair laid a clutch of three eggs, two of which were fertile. However, one of the chicks died very early during the incubation period; the other hatched successfully on July 14th 2006. The breeding programme is part of an international effort and is being undertaken in cooperation with the Brazilian Government's Natural Heritage Department (IBAMA). The aim is to establish a viable captive population, as part of a conservation programme to secure the long-term future of this Critically Endangered species.

AWWP's successful breeding of a Lear's Macaw represents the first offspring bred as part of the official IBAMA-initiated captive-breeding programme. This breakthrough has provided important breeding data that will be helpful to other institutions participating in the breeding programme and will hopefully contribute to further breeding success with this species.

BRED FOR THE FIRST TIME

The pair of Sulawesi Tarictic Hornbills *Penelopides exarhatus sanfordi* which arrived at Whipsnade Wild Animal Park from San Diego Wild Animal Park in 2005 (see News & Views Vol.112, No.1, p.47 (2006)) has bred. It is the first time that the Sulawesi Tarictic Hornbill has been bred in the UK and may be a European first. The female broke out of the nest on September 20th, followed by a single young one.

* * *

ARACARIS HATCHED IN DALLAS

Josef Lindholm, Senior Aviculturist at The Dallas World Aquarium, reports that so far in 2006, nine Green Aracaris *Pteroglossus viridis* have been reared from four clutches of eggs (two were hatched by a female less than a year old, and four were from a single clutch). The pair of Ivory-billed Aracaris *P. flavirostris*, which hatched two chicks last year (the first hatched outside South America), has hatched three chicks this year. The first Crimson-rumped Toucanet *Aulacorhynchus haematopygus* in almost two years has also been hatched.

* * *

CIRL BUNTINGS RELEASED

More than 70 Cirl Buntings *Emberiza cirlus* have been released in south Cornwall, here in south-west England, as part of an innovative project by the RSPB (Royal Society for the Protection of Birds), Paignton Zoo Environmental Park, Natural England (the enlarged organisation which has replaced English Nature) and the National Trust.

Cirl Bunting chicks were collected under licence earlier this year by the former English Nature from several sites in south Devon and hand-reared by aviculturists from Paignton Zoo Enviromental Park, and it is these birds that have been released in south Cornwall. It is said to be the first European reintroduction of a small farmland bird.

The Cirl Bunting was once widespread in the UK, being found along the south coast of England, north to the Midlands and Wales. It requires weedy stubble fields on which it can feed on seeds and spilled grain during the winter months and insect-rich land with hedges in which it can nest during the summer months, but changes in farming practises led to a loss of such habitat and its decline, until eventually it was restricted to a small area of south Devon. Only 118 pairs remained in 1989, but since 1993 the RSPB has worked with farmers, landowners and partner organisations to ensure that the Cirl Bunting has suitable places to live, feed and breed. As a result the population has increased to more than 700 pairs.

The reintroduction project will run for the next three years, so that enough birds can be released to create a sustainable population.

BRED FOR THE FOURTH TIME

London Zoo has succeeded for the fourth time in breeding the Toco Toucan *Ramphastos toco.* Earlier this year three young were fledged.

* * *

MORE CONSERVATIONALLY RELEVANT

Last year Chester Zoo rationalised its bird collection to make it more conservationally relevant. Additions to the collection included Chestnut-backed Thrush *Zoothera dohertyi*, Orange-headed Ground Thrush *Z. citrina*, Chestnut Thrush *Turdus rubrocanus*, White-naped Yuhina *Yuhina bakeri* and Timor Zebra Finch *Taeniopygia g. guttata.* It also acquired 10 Kikuyu White-eyes *Zosterops kikuyuensis*, specifically to help build the skills of the bird staff involved in the incubation and rearing in the field of the Critically Endangered Olive White-eye *Z. olivacea.* The zoo also added to the collection three pairs of Madagascan Fody *Foudia madagascariensis*, a species very similar to the Critically Endangered Mauritius Fody *F. rubra*, which Chester Zoo staff travel to Mauritius each year to incubate, hand-rear and reintroduce to the wild as part of its field support to Mauritius.

This year Chester Zoo had another exceptionally good breeding season with more than 80 species laying eggs. The most noteworthy breeding was of two Javan Rhinoceros Hornbill *Buceros rhinoceros silvestris* chicks. The parents have been together at the zoo for 11 years and the female is known to be at least 26 years old. It is the first time that the Rhinoceros Hornbill has been bred in the UK.

The zoo has acquired a new female Great Hornbill *B. bicornis* from Alphen in the Netherlands. She is more than 37 years old and came originally from the wild. She will be paired with the zoo's 27 year old male. The Chestnut-backed Thrushes acquired in 2005 immediately settled in the zoo's Tropical Realm and produced their first brood of three chicks. Elsewhere in the zoo a pair of Northern Lapwing *Vanellus vanellus*, succeeded in rearing a chick. The parents were hatched from eggs rescued from the runway at Hawarden Airport, where wild lapwings nest occasionally in areas that are unsafe for birds and pose a potential hazard to aircraft.

A White-naped Crane *Grus vipio* chick hatched in late April. The egg was artificially incubated, then returned to the pair at hatching. It is the first offspring sired at the zoo by its new 17 year old male crane which was hatched at Frankfurt Zoo. Chester's old male died in January 2005. It was more than 60 years old. He was obtained by London Zoo from Alfred Ezra in 1949 and was transferred from Whipsnade to Chester in 1997. Chester's pair of Great Grey Owls *Strix nebulosa lapponica* successfully fledged four chicks. Since being at the zoo the pair has produced a total of 18 young.

SECOND LESSER BIRD OF PARADISE

Toledo Zoo, Ohio, USA, has bred a second Lesser Bird of Paradise *Paradisaea minor*. The first chick was hand-reared, but this chick was successfully reared by its parents.

* * *

SAVING ENDANGERED PACIFIC PARROTS

Last year's Birdfair (British Birdwatching Fair) raised a record £200,000 (approx. US$370,000) to support BirdLife International's work conserving Gurney's Pitta *Pitta gurneyi* in Myanmar and Thailand (see *Avicultural Magazine* Vol.111, No.4, p.188 (2005)). This year's Birdfair raised funds for BirdLife International's Pacific programme, which will focus on five parrots, the New Caledonian Lorikeet *Charmosyna diadema*, Uvea Parakeet *Eunymphicus cornutus uvaeensis*, Rimatara or Kuhl's Lorikeet *Vini kuhlii*, Ultramarine Lorikeet *V. ultramarina* and Red-throated Lorikeet *C. amabilis*.

It is hoped to rediscover and conserve the New Caledonian Lorikeet, thought to have last been seen in 1953 or 1954 and in 1976. A similar search will be made for the Red-throated Lorikeet of Fiji. A recent three month survey failed to find any trace of it. The Rimatara or Kuhl's Lorikeet and the Ultramarine Lorikeet, along with the Uvea Parakeet, will benefit from specifically targeted actions. Twenty Rimatara or Kuhl's Lorikeets will be translocated to the island of Atiue, which is free of the Black Rat *Rattus rattus*. The latter having arrived on Rimatara during the building of an airport. Another species, the Blue or Tahitian Lorikeet *V. peruviana*, will also benefit from the programme, as will many other Pacific birds on the Cook Islands, Fiji, Samoa, New Caledonia and French Polynesia, the five project countries.

* * *

KILLED IN AN ENCOUNTER WITH AN ELEPHANT

Italian aristocrat and explorer Prince Eugenio Ruspoli (1866-1893), after whom Prince Ruspoli's Turaco *Tauraco ruspolii* was named, travelled in Ethiopia from 1891-1893. He was killed in an "encounter with an elephant" which he had wounded, before he had got around to recording the locality and date (in 1892 or 1893) that he collected the turaco which bears his name.

* * *

DIANA HOLLOWAY

Aviculture lost one of its greatest practioners with the passing of Diana Holloway on Sunday, July 16th 2006.

Blackbrook Zoological Park and Hillside Wildfowl contain so many avian jewels, from penguins to pelicans, pheasants to waterfowl, ibis to crowned pigeons, flamingos, cranes and storks, and so many other delights that it is hard to imagine that it was all created by this remarkable lady, actively supported by her son Mark.

Diana served as President of the British Waterfowl Association, a Director of the International Wild Waterfowl Association and, of course, a Vice President of the Avicultural Society.

Diana's modesty and easy nature endeared her to many and her passing will be mourned by all who knew her. Our sincere condolences to Mark at this very sad time and I know he will want to continue with this work and build up the two collections to greater heights in the future as a living memorial to a fine creative lady.

Christopher Marler

INTERNATIONAL ZOO NEWS

For more than half a century, *International Zoo News* (*IZN*) has provided the zoos and aquariums of the world with a regular forum for the exchange of news, information and ideas. Besides the latest news from scores of animal collections, *IZN* regularly contains original feature articles on the captive management of wild animals, profiles of major collections, reviews of the latest zoological books, and summaries of recent articles from other zoo publications around the world. *IZN* also highlights the importance of captive breeding for the survival of endangered animal species, and carries many reports on reintroduction and other *in situ* conservation projects.

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